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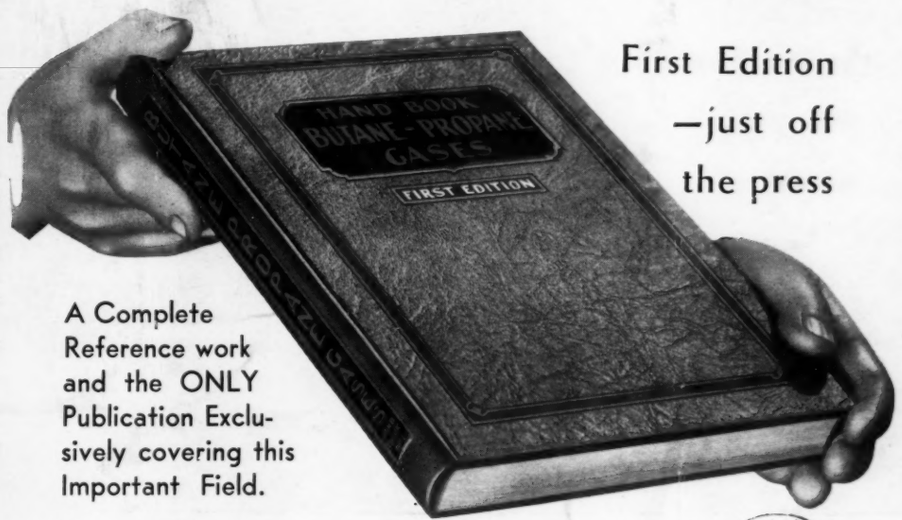

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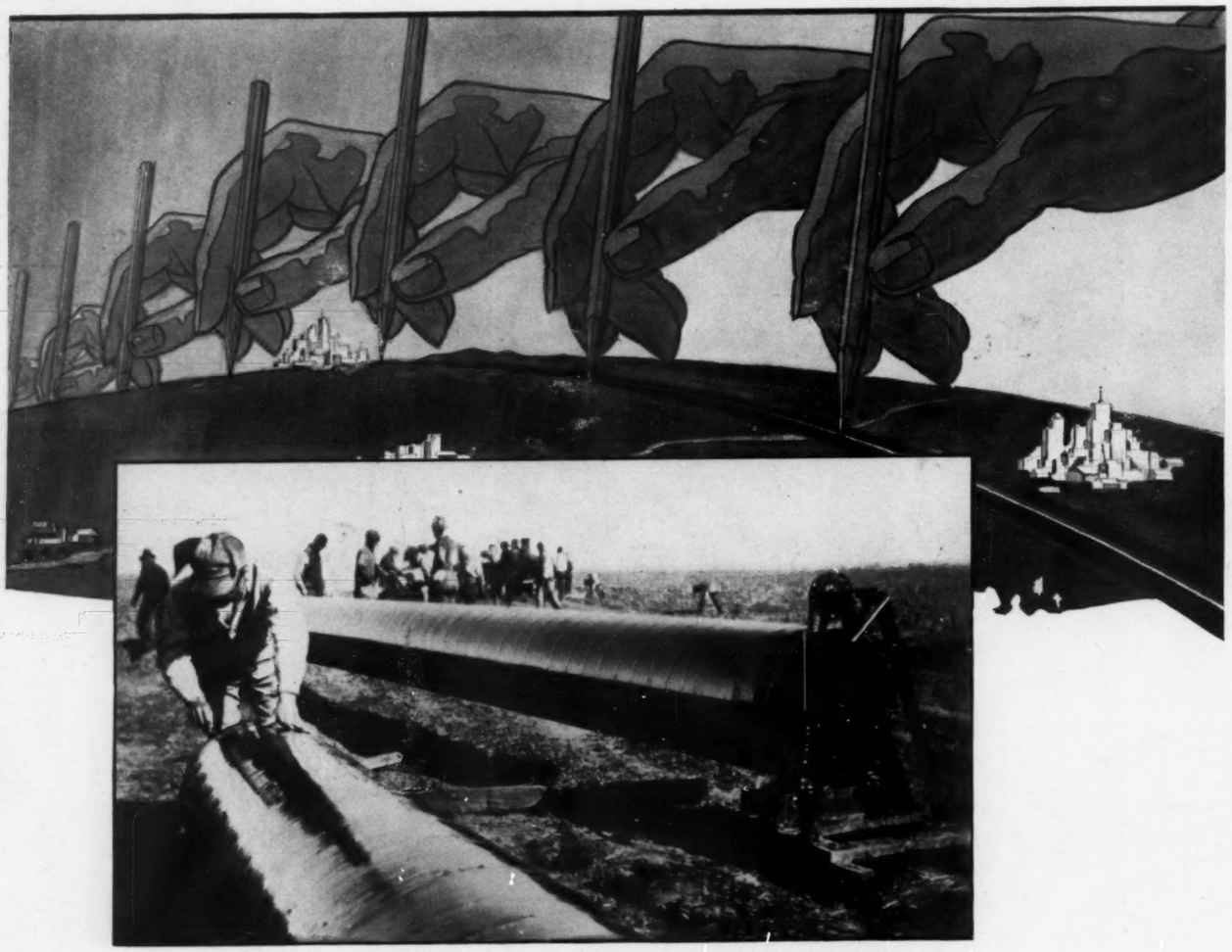

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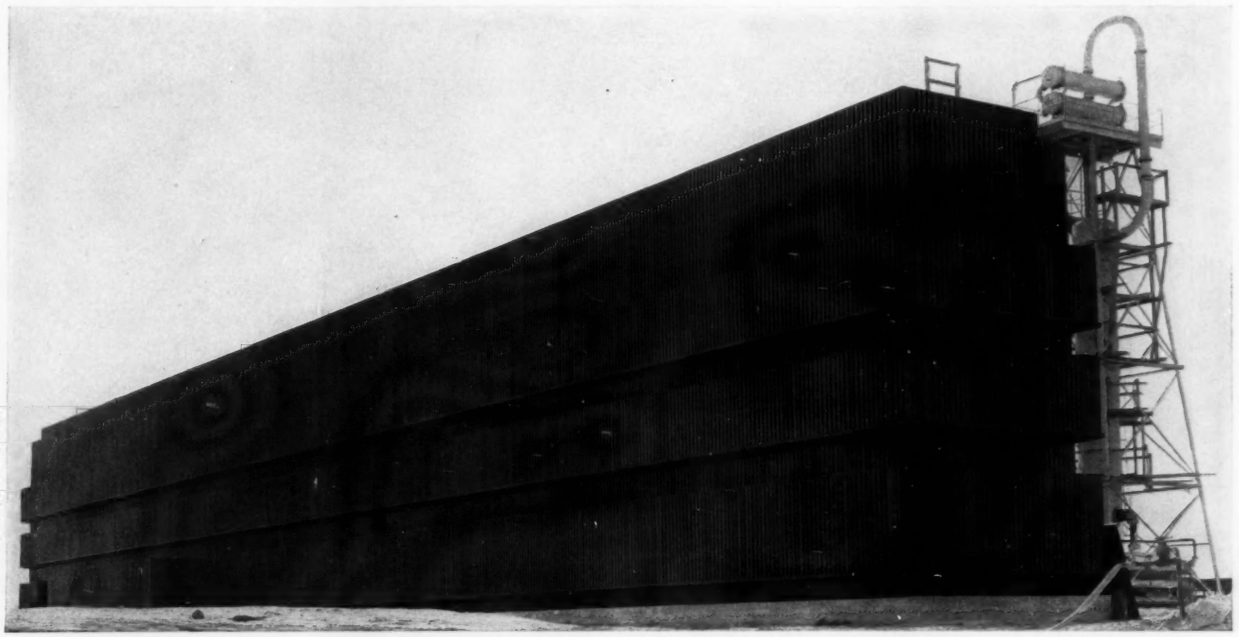

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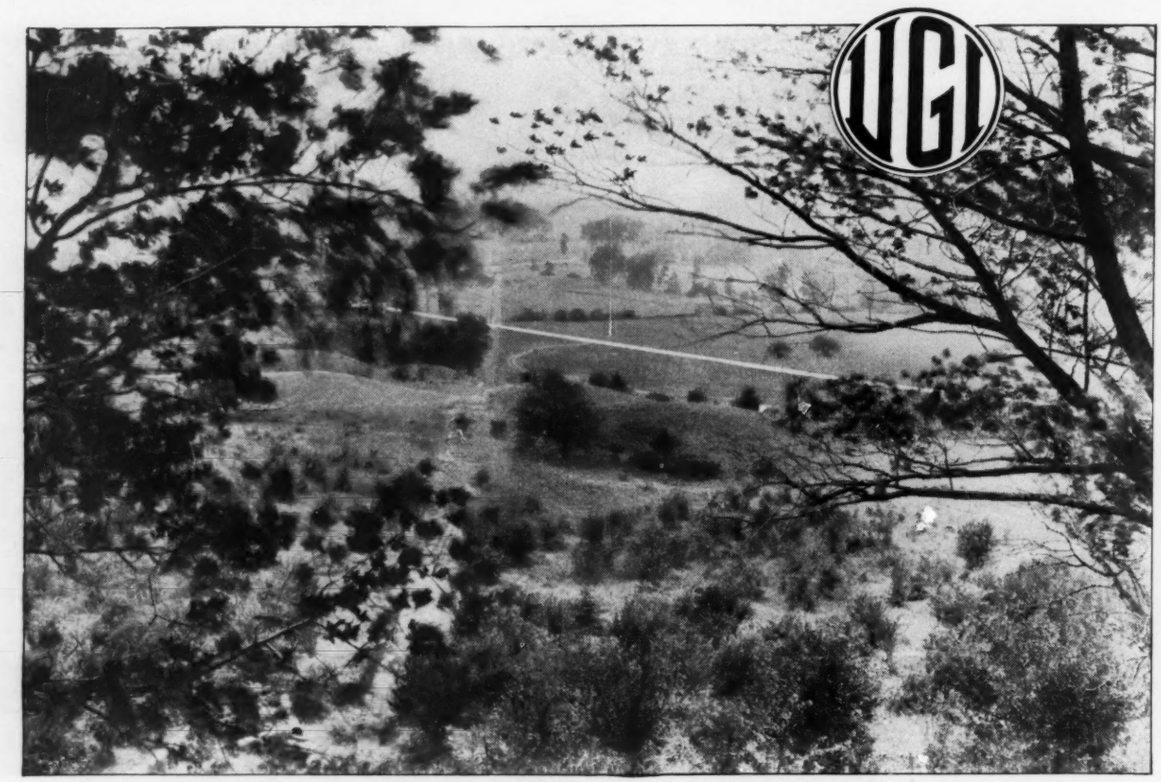

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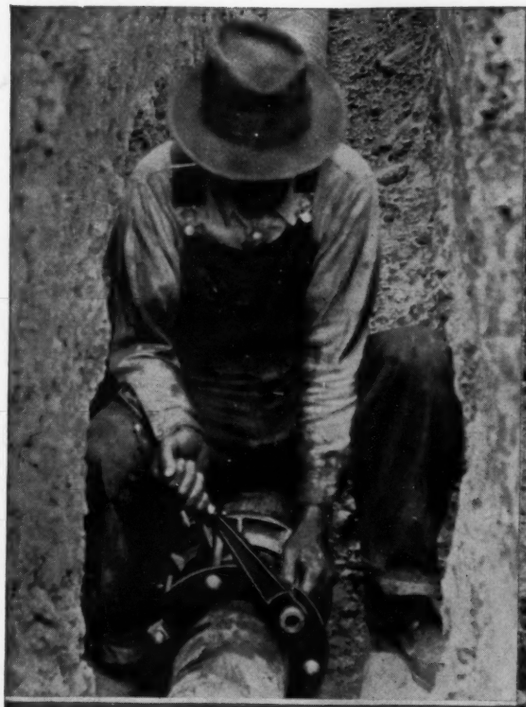

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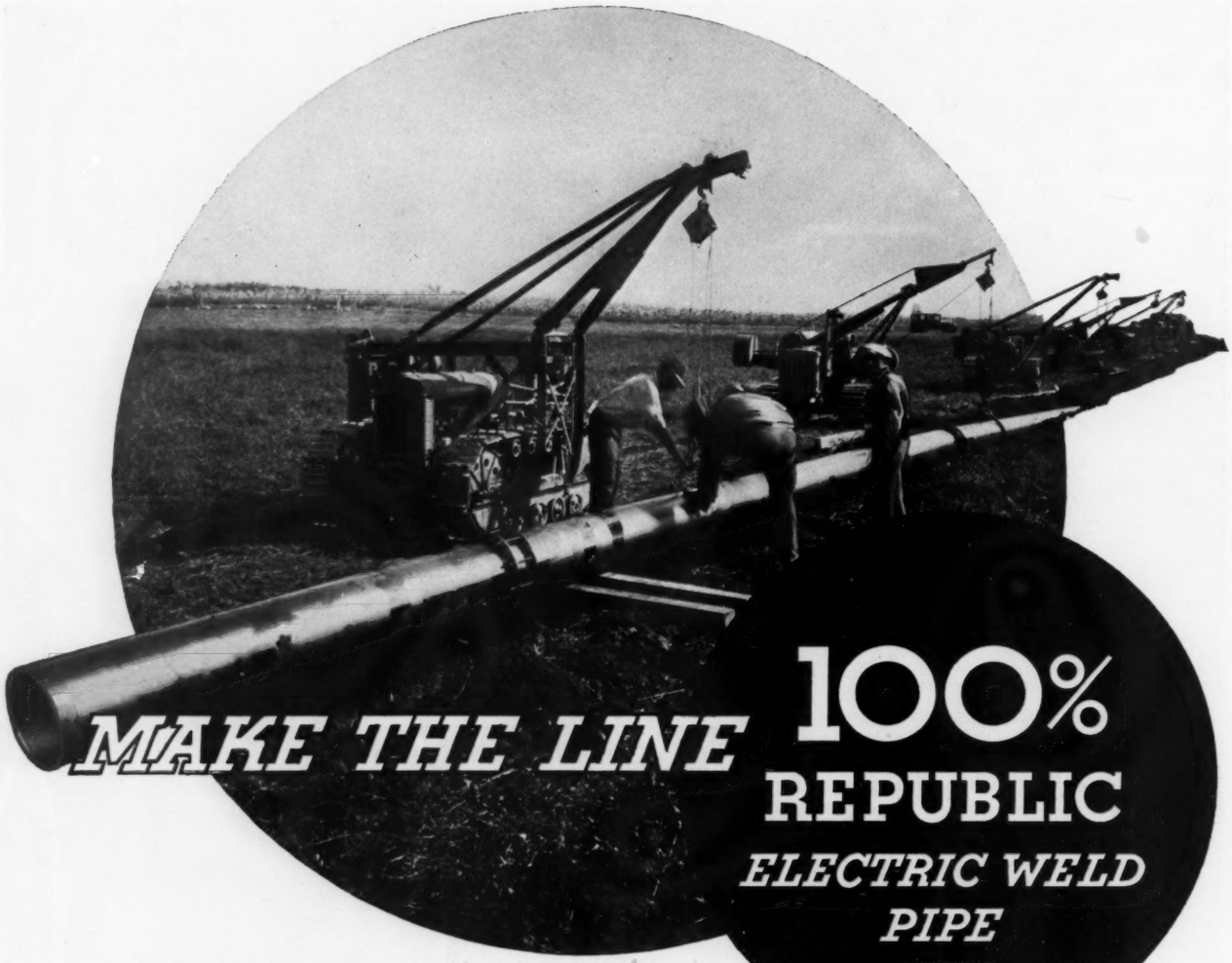

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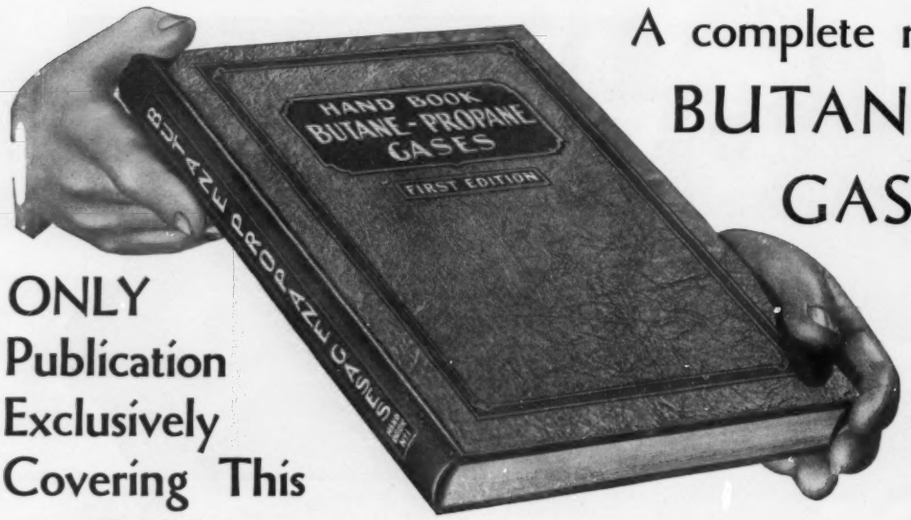

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CONTENTS

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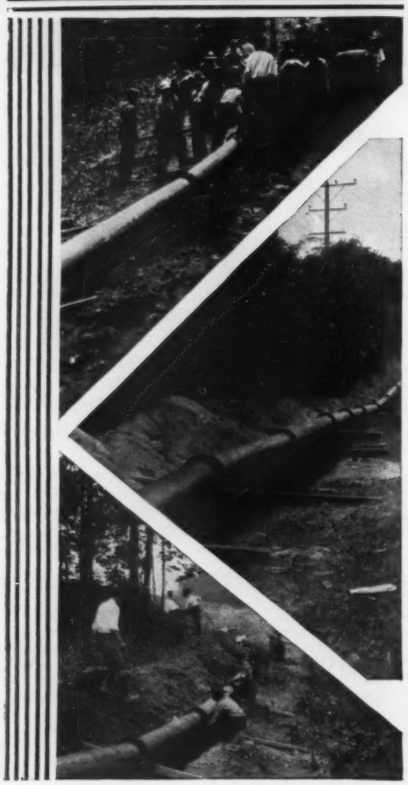

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Contents for November, 1932

The Need for Promotional Selling 11
By F. M. Banks

Objectives and Funding of a Pension and Benefit Plan 12
By Robert A. Hornby

Football Fever Makes Sales for Minnesota Northern 15

Leak Clamps for Cast Iron Bell Joints 16
By Henry S. Harris

1931 Gain in Natural Gas Customers 17
By G. R. Hopkins

Customers Turn Salesmen for Kansas Power and Light . . 18

The Attitude of Utility Commissions Toward Utilities 19
By Karl F. Griffith

PACIFIC COAST GAS ASSOCIATION 20

MEASUREMENT AND CONTROL 24

Telemetering and Remote Control . . *By Ralph Cook* 24

Principles and Applications of Pyrometry . *By S. F. Godfrey* 25

BUTANE-PROPANE NEWS 34

Bottled Gas Growth Stimulus to Many Related Industries . 34
By R. W. Thomas

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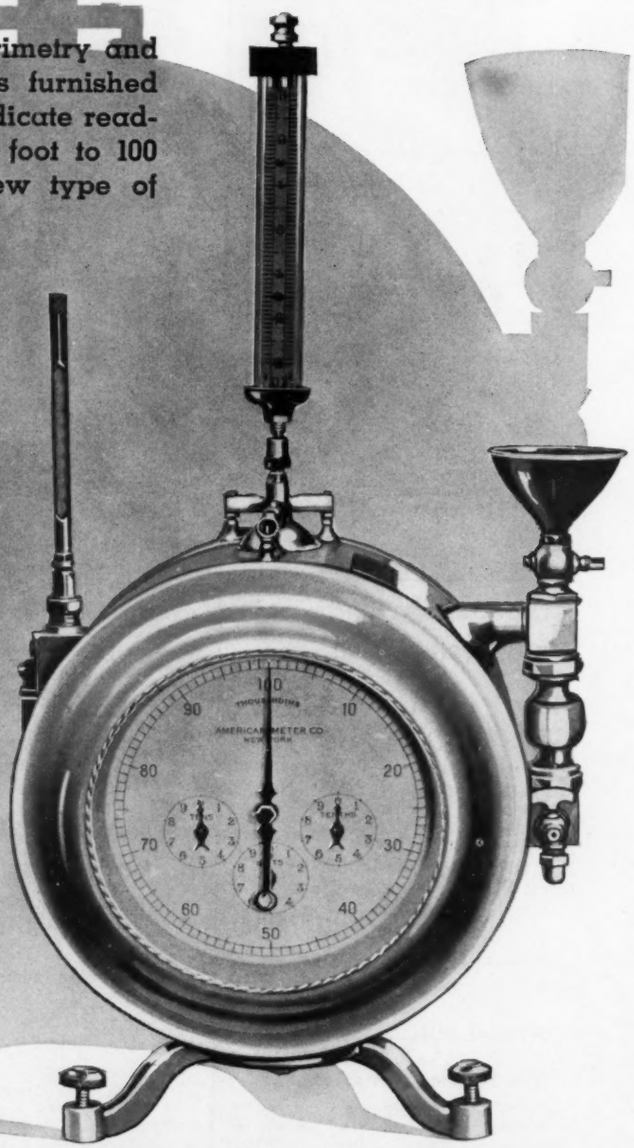

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WESTERN GAS

Vol. VIII, No. 11

"Reg. U. S. Pat. Off."

A Monthly Journal of the Gas and Gas Appliance Industries in *Western America*

The Need *for* Promotional Selling

. . . *based on knowledge of local markets*

By F. M. BANKS

General Superintendent of Sales
*Southern California Gas Company**

SOME of the utilities that have recently changed to natural gas service have recognized the need of a well laid out plan for the development of load to overcome the volumetric loss which might disastrously affect their financial status. One of the important parts of such a plan is a program of well balanced appliance selling and sales stimulation. Unfortunately, however, some of the companies which have been supplying natural gas for some time, not faced with the urgent necessity of planning for load recovery, have developed with whatever business could be easily obtained. Frequently no effort was made to develop the market, or at best, general appliance selling without a load-building plan behind it, was considered as sufficient, and even that was thought to be of doubtful value. In consequence, the average natural gas company has failed to increase its load as it should when one considers the market which should be available with the low selling price of its gas on a thermal unit basis.

I am a firm believer in promotional selling by utilities if that selling is done thoroughly and logically. Promotional selling is creative selling carried on in the field, and is distinguished from merchandising by the fact that it develops and maintains or expands markets. For example, a field salesman for a utility may call upon 15 prospects to make one sale. If his sales presentation is designed to create a desire for a service which the appliance can render, rather than for the appliance alone, he will unquestionably have made potential buyers of some of the remaining 14, and definite figures can be obtained to show that many of them will buy from non-utility stores. Promotional work of this type cannot be carried on under normal conditions in sufficient volume by retailers from the normal profits of retail selling. This promotional selling which is so necessary to our industry, must be done by utilities.

F. M. Banks

One might expect a question "Why do utilities sell appliances if their major purpose is to sell ideas which will increase load?" The answer is simple; it is difficult to sell in the field at best, but the job of selling the advantages of oven control, oven insulation, or a constant supply of hot water without any tangible appliance about which to build a sales presentation is doubly hard. Anyone who thinks this is idle conjecture may prove otherwise to his complete satisfaction by trying it himself, but ample statistics make such trials unnecessary. To do its promotional work with the greatest effectiveness for the money to be spent, a utility must sell appliances.

A splendid example of the need for the utility to sell appliances is to be found in the current development of the market for clock-controlled gas ranges. Within the past two months, in one section of the Pacific Coast, utilities have sold approximately five times as many clock-controlled ranges as all merchandisers of gas ranges, and rightly so. The manager of the range department of a department store or hardware store is accountable for the results of all advertising expenditures. He is usually required to show a sale of goods advertised in a fixed ratio to the cost of the advertising done in the period. He cannot afford to risk money in advertising unless he is reasonably assured of a chance to show a prompt return in sales.

Development of the gas refrigeration market should be the job of the utilities, for the public's acceptance of electric refrigeration must be offset by promotional selling and the effect of a highly competitive price market must be overcome. Merchandising profits can hardly be realized under these conditions.

In the promotional selling of appliances for the benefit of the gas industry it is not sufficient just to sell a volume of appliances. An unfortunate error frequently made is to attempt to sell a complete price range of appliances because of the mistaken idea that it is necessary to be in a position to supply the demands of all potential buyers of appliances. If the utility attempts to acquire volume of appliance sales by selling in the low

(Continued on Page 31)

* Mr. Banks' discussion was given before the Natural Gas Department of the American Gas Association, at the Atlantic City convention in October.

Objectives *and* Funding *of a* Pension *and* Benefit Plan

By ROBERT A. HORNBY

Executive Engineer
Pacific Lighting Corporation

COMPANY managements and employees alike will benefit from this discussion, prepared by the author following an extensive study of pensions and supplementary benefits. In the course of this study Mr. Hornby has consulted insurance and actuarial sources, and has drawn from the experience of other industries. He has communicated with 81 national industries, reviewing plans in effect in 54 of these industries; and during his investigation he has reviewed some 68 pamphlets, books and monographs.

This summary of conclusions from his study was presented before the Pacific Coast Gas Association's 1932 convention, and is being given to "Western Gas" readers in two installments. The first, appearing this month, deals chiefly with the objectives of pension and benefit plans; the second will enter into some detail as to characteristics of the funding of such plans.—Editor.

TO BRING the reader to the point where this paper begins, I have prepared some charts or epigrams which might be entitled, "Why Do Pensions Exist and Why Should They Be Provided for in Advance?" By reading the Tables No. 1 to No. 6, we can pass quickly through this "elementary school of pensions."

Robert A. Hornby

The topics which have been chosen for this paper might be classified properly as the introduction and conclusion of the designing of a pension and benefit plan. They are: "What Are the Objectives to Be Attained In Instituting a Pension and Benefit Plan?"; and, "What Should We Know About the Characteristics of the Funding?"

These two topics were chosen because as the literature on the subject was reviewed and other plans were inspected, it was impressed upon me that most managements at the outset apparently did not have before them a clear statement of the objectives to be accomplished by the institution of a plan. Managements' explainable lack of knowledge of the characteristics of the funding has resulted in an understandable failure to appreciate the present out-of-pocket costs of these benefits which so often are to be paid out over the long future.

The prime causes for the failure of industries to conquer this problem seem to be that there has been far too much emotion at the outset, and too little competent actuarial advice later. The instances are abundant wherein this problem has conquered industries.

The Objectives

As the study progressed, some rule-of-thumb measure with which to test schedules of benefits became increasingly necessary. The objectives, which it was hoped would be attained, proved to be the sought-for yardstick. They seem to be six in number and are listed in Table No. 6 in what appears to be their present order of importance.

They suggest benefits other than pensions, but the pension undertaking is major—it is the one which requires the most attention, both at the outset, and certainly later. It is one of the longest (if not the longest) term future problems which the industry has before it. Because of its long future, it is realized that changes in human conduct and affairs, as well as employee relations, will have their effect upon the relative importance, if not upon the number, of these objectives. At this time it can be seen from the viewpoint of industries, that objective No. 1, the relief of need, and objective No. 2, the elimination of superannuation, must necessarily alternate in their position of importance in individual cases, depending upon whatever provision the employee has made for his own retirement through individual thrift. However, it appears that *objective No. 1* will be the primary reason for considering the institution of a plan calling for the payment of pensions and their supplementary benefits, even though its urgency may be relieved or entirely removed in individual cases.

If it were a fact that there were no cases in which need would exist, then all practical objectives could be accomplished without the provision of retirement incomes. Therefore, there must be a humanitarian motive back of the establishment of any pension undertaking. The review of the literature indicates that this was the dominating, if not the sole motive in granting the first retirement incomes.

It is the expression of society's sense of responsibility to provide for those in need who have not, or could not, provide for their own non-productive old age. Industry, for a steadily increasing number of lives, has assumed this task where it affects its own employees. In doing so, it has discovered that there are also some practical advantages or objectives which can be accomplished by planning for the retirement of its employees on a formal procedure, and then providing the means with which to do so over the productive life of its employees so retired, and include the cost in the product, if possible.

Thus we come to *objective No. 2,* the just and prompt retirement of aging workers. This is the major, and may be the all-inclusive practical reason for instituting a pension plan. Its cause, superannuation, can be mitigated by placing employees whose producing capacity declines in old age "in other kinds of work more suited to their ability." There is, of course, a limit to the number of such "watchman" jobs, and industry has concluded that old age retirement is the only dependable treatment of this problem.

Employee superannuation has not been large in the Pacific Coast utilities, but it will be more important in the future. Due to the increasing tendency towards stability in size of employee staff, the average age will advance and the number of pensioners will increase. The prospect for the immediate future is just that.

Objective No. 3, the improvement of organization morale, is the resultant of the accomplishment of objective No. 2, but it is more of an expectation than a foregone result. Unproven importance has been placed on this objective. For example, it has often been contended that

MODERN BUSINESS REQUIRES:

Efficiency	Endurance
Accuracy	Alertness
Speed	Safety

What can the employer do when old employees are retained in service past their real usefulness?

1. EASY JOBS soon run out, leaving managements to choose between (2) *dismissal* and (3) *pension.*
2. DISMISSAL has many objections if allowed to occur. An industry could not live with itself or with the community.
3. A RETIREMENT ALLOWANCE —the only practical course, but must be properly designed and funded.

Table No. 1

DEPRECIATION

1. Plant and Equipment

The XYZ Company sets up reserves against physical and functional depreciation. As units are being worn out or as inadequacy and obsolescence overtake them, their complete ultimate loss and replacement is being reflected on the Company's books.

THAT'S SOUND MANAGEMENT AND ACCOUNTING

2. Employees

Just so, also, do employees wear out and efficiency demands replacement—

But the XYZ Company has not been setting up reserves for the ultimate replacement of present employees when they become old or disabled.

PENSION COSTS HAVE BEEN CARRIED IN THE PAYROLL

Table No. 2

ON THE UNFUNDED BASIS THE COMPANY STANDS THE COST OF THE PENSION BILL ALONE (If It Can)

But on the Fully Funded and More Modern Cooperative Basis:

THE EMPLOYEE CONTRIBUTES

because:

1. HE CAN
2. HE SHOULD
3. HE MUST—if the pension is to be adequate and if it is to be paid at all.

AND INTEREST HELPS

By starting now with annual reserves, *interest* will pay more than one-half the cost for the average employee.

Table No. 3.

THE SOUND WAY OUT

SINCE THE XYZ company won't turn faithful employees out penniless, it must pay a Pension bill whether as a Retirement Allowance or disguised as a pay check.

DEPRECIATION reserves for employee replacement should be started when the employee is young and applied against the product, while the employee is producing.

ONLY THIS WAY GIVES THE TRUE FINANCIAL PICTURE OF THE BUSINESS

Table No. 4.

a pension and benefit plan reduces turnover. In fact, this has quite frequently been offered as the reason for installing a plan. However, those who have had plans in effect for a sufficient length of time, discount the claim.

The young employee who is seeking experience, the young employee who is not impressed either with the necessity to build for the future or to seek security as well as compensation in employment, the employee to whom the future offers unlimited opportunities, or the young employee to whom old age appears a remote eventuality, will probably not be induced to stay with an industry because of pension benefits which may be

SIMPLE PENSION ARITHMETIC

Assume:

ANNUAL PENSION of $720 at age 65 after 30 years of service.

HOW TO PAY SAME

1. UNFUNDED BASIS
   (Obsolete Method) Employer's Outlay

   Company pays out of pocket on the average for 12 years (his expected lifetime at 65) 12 x $720....$8,640.00

2. UNFUNDED BASIS
   (A Step in the Right Direction)

   Cost of Retirement Income of $720 annually for life if the Company waits until retirement at 65 and sets up the then present value of $7,000.00

3. FUNDED BASIS
   (Solvent and Sound Method)

   Establishes each year proper reserve so that Fund to provide pension is in hand at retirement age (65). Through interest and with benefit of employee contributions—Employer's cash outlay is reduced to $2,400.00

Table No. 5.

OBJECTIVES TO BE ATTAINED BY INSTITUTION OF A PENSION AND BENEFIT PLAN

HUMANITARIAN—RELIEF OF NEED:

1. To relieve need by providing the means for a minimum existence after old age retirement (also upon Death, and During Disbility).

PRACTICAL—MINIMIZE EMPLOYEE SUPERANNUATION

2. To enable just and prompt retirement of aging workers.

PRACTICAL—EMPLOYEE AND PUBLIC GOOD WILL:

3. To improve organization morale.
4. To minimize the occasion for and the justification of importunities.
5. To reward faithful and industrious service.
6. To create favorable public opinion, or conversely to insure against public ill-will in matters in which the public voice is a force with which to be reckoned.

Table No. 6.

available to him in his old age. On the other hand, it is frequently expressed "that the older men are anxious to hold their jobs, even without the inducement of pensions." In any event, the effect of a pension plan on labor turnover must be set down as highly problematical.

The literature on the subject, in discussing the practical objectives, states that a well designed, solvent plan will eliminate the waste due to the retention in productive occupation of aging workers who can no longer render a fair return in the value of their services for the amount of wages paid them; who retard the pace of the plant; and who block the paths to the promotion of more able men.

I HAVE felt that these claims for efficiency have been overemphasized. I am willing to concede that there may be some stimulation of the efficiency of the older worker, due to his feeling of security and hopefulness resulting from relieving him of the fear of destitution and dependency in old age. Again we refer to the relief of need. Probably there will be some stimulation to the younger employees in their knowledge that the avenues of promotion will be open by the regular withdrawal of the older workers. The young and ambitious employee need no longer fear that only death can bring him an opportunity to advance. It may be reasonable to expect that opportunity breeds ambition and energy in all ranks of the working force with highly desirable, if not definitely measurable, results.

Other favorable effects on morale have been and can be conjured up, but they are even more immeasurable. Paradoxcally, these claims have been voiced the loudest by those companies who have retained employees to the bitter end. If economy in operations is to be effected, the element of discretion in the retiring of the aged must be reduced to a minimum. The process of elimination must be automatic and certain, rather than delayed and discretionary. Otherwise, it appears that these practical advantages will not even be a hope.

Objective No. 4, the minimizing of occasion for importunities, might be stated as a reciprocal of the relief of need, because importunities would surely result, in the majority of cases, if need were not relieved in old age where the employee is no longer able to be a producer.

Setting aside the inherent humane sense of personnel or employee responsibility which is very deep-seated in almost every large enterprise, and particularly in public utilities, it is safe to say that there are but few industries which, because of their close association with the life of the community, would care to face the condemnation leveled at them as a result of their failure to assist former aged employees after retirement, who have become a burden upon their family, charities, or society in general. If they were denied, importunities would soon take the form of compulsion, but industry is human and not only meets this eventuality, but those that would exist upon death and disablement. In many instances, these cases of importunities arising prior to retirement have been the motivating force in supplementing pensions with death and disability benefits.

It is a criticism of many plans that they recognize the imminence of these importunities, but provide benefits which are inadequate to the need; and thus deceive themselves into a sense of fulfilment, and it is not to be inferred by this statement that there is no limit to the amount which should be provided.

Might this thought also be left: It is in the earlier years when the greatest need often exists. It is then that the young man has young children, and has had no chance to earn or save a personal reserve. The older man may not have saved or earned much, but he has had the chance to do so. Our thought has been warped by sales and advertising efforts. Too often life insurance is sold upon the imminence of death, rather than the necessity for protection or the desire of the insured to relieve need. Insurance salesmen are inclined to rattle the doors of the hearse. Industrial benefit plans are to relieve need, not to reward physical or economic death. None of these statements are made in a spirit of irreverence, but in a sense of analysis.

AND now we pass to the black sheep of the family, *objective No. 5.* The desire to reward faithful and industrious service expresses an almost universal desire on the part of managements. It is their wish to encourage and recognize perseverance, ambition, faithfulness, ingenuity, industry, etc., particularly if it has been evidenced over a long and continuous period. It is a humane and noble desire, and certainly most fortunate that it exists, but it must be curbed in a pension and benefit plan if the primary objectives are to be accomplished in the future, as well as in the present, in small as well as large industries, and in good as well as bad times. If it must be included, it should be provided for specifically—then its cost can be weighed in full against its value.

It would seem that rewards must be given as deserved and when merited if they are to have capital value. In industry, they usually take two forms. One is money, or a cash reward. The other, and no less valuable to the employees, is promotion, or reward of merit. Employees must be treated uniformly; and to the extent that the benefits of a pension plan exceed the amounts provided by an employee through his own thrift to relieve his own (or his dependents') need, benefits may reward. To the extent that a pension plan permits or requires the retirement of men "ahead" at a specified age, and thus affords more frequent opportunities for the advancement of the worthy and usually ambitious—to that extent a plan rewards.

PERHAPS no one element of the several unsound elements that can be injected into a benefit undertaking has done more to cause pension plans to become insolvent, than the frequent unfortunate eclipsing of the principal objectives by the desire to reward service. Therefore, in developing the benefits and schedules, the unfortunate experience of others should be heeded as a warning against giving any consideration to rewards. This attitude will lead to magnanimity, and probably to financial disaster.

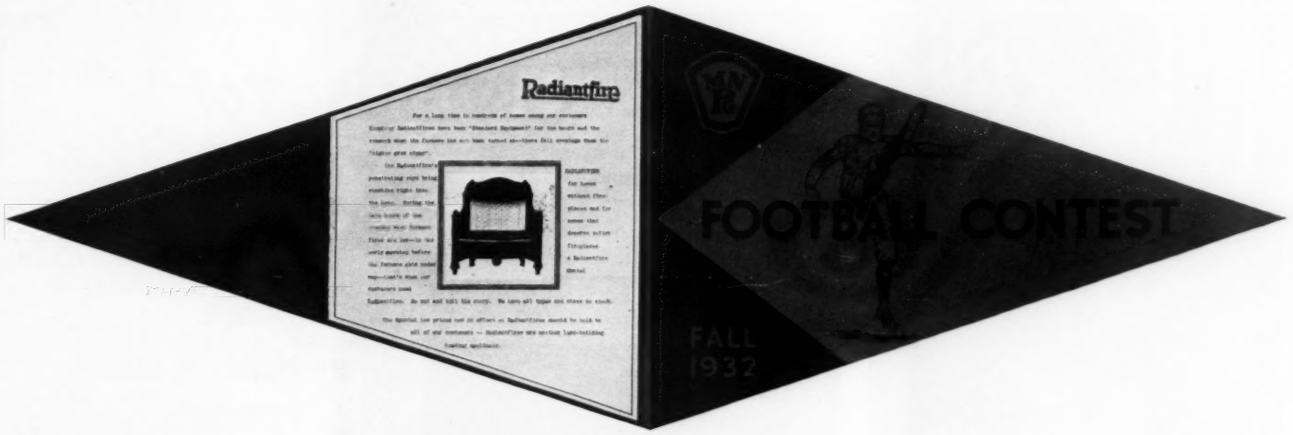
Objective No. 6. The good-will or the ill-will of the community is fulfilled by accomplishing objective No. 1, the relief of need, and objective No. 4, the lessening of importunities. Whereas the employer may, with all justice, condemn the individual for having been thriftless, when his poverty and distress in old age is too apparent, the world is more tolerant of the individual, since the employee's thriftlessness is a common weakness. But the world, conversely, is too ready to condemn the employer in whose service the individual became old, and at whose doorstep they lay his present plight. Such instances, if permitted to occur, would presumably become public ill-will.

However, since industry is not permitting such a condition to occur, it appears that good-will, and not ill-will, is the reasonable expectation. The attraction of a better class of labor, a feeling of gratification by the employees in their enjoyment of the benefits, and the expression of such gratification to family, friends and neighbors, may actually enhance the industry's community prestige, and assist in the creating of public goodwill, which good-will, in the case of public utilities in particular, is hardly less important than the good-will of the working force.

The self-designed plans of industries may forestall governmental forays into this field. The National Industrial Conference makes the following comments:

"It is believed that the development of such a sentiment in industrial centers will help to

(Continued on Page 44)



Football Fever Makes Sales *for* Minnesota Northern Power

TO crystallize its sales and operating activities during the Fall months of 1931 the Minnesota Northern Power Co. devised a contest known as the "77" campaign—unique in the fact that it included all activities of the company, accounting and operating as well as sales. The company headquarters in Minneapolis, Minn., and has operating properties in the Dakotas, Montana and other Mountain states. Fourteen operating divisions comprise the organization.

So successful was the "77" campaign that an effort similar in purpose, though utilizing different campaign materials is now under way over the company's several districts. A. E. Schwarz, commercial manager for the Minnesota Northern Power Co., gives *Western Gas* the following details for the 1932 contest.

In picking the "stage set" for the campaign the company sales executives determined to use the football theme, since football interest is at fever heat during this season. The headquarters staff therefore went into a huddle, with Mr. Schwarz calling signals, and came out with a campaign prospectus which carries out the football theme to the nth degree.

Major items in the promotional plan set up for the campaign include the following:

1. The Prospectus, issued in pennant shape, sent to the executive personnel of the company.

2. The "Sales Bull," regular sales publication issued to sales employees from headquarters. Issues of the "Sales Bull" put out during the campaign were designated as Football Editions.

3. "Quarter News"—special campaign bulletin.

4. Bill inserts for the customer.

5. Doorknob hangers for the non-customer.

6. Newspaper advertising.

7. A special contest plan for local use.

As illustrated above, the Prospectus is in the shape of a pennant. On the cover is the company insignia at the top and the words "Football Contest" imprinted over the figure of a football player. The inside of the front cover carries a message from R. M. Heskett, vice-president of the company and "commissioner of sports" for the duration of the campaign. Each company division is accorded a separate pennant in the prospectus, on which appears the photograph of the division manager as "coach."

The Prosectus thoroughly reviewed the campaign features, and was calculated to develop interest in divisional competition.

In the "Football Special" edition of the "Sales Bull" much campaign information is given, and general non-sales employees informed on their part in the all-company contest.

The contest is divided into three games, made up of three 30-day periods.

"Quarter News" is being issued as a one- or two-page bulletin showing sales gains and division standings each week. The week equals a quarter in the monthly game being played. Each month comparative records of all the departments and 14 divisions are published in the "Sales Bull."

Various special prizes are being announced from time to time during the campaign, and special local contests developed within divisions.

An employees' contest specially designed to help sell small appliances in the company's electrical properties, but also flexible enough for use in the gas division, was built up around the following plan:

In each division a large card was prepared with about 32 playing cards pasted upon it—some face-up and some back-up. Under each card was written the name of an appliance. Appliances which the district wished to dispose of first were assigned "Ace" or "King" values. When an employee sells an appliance he pulls the card from the chart and writes his name in the space. At the end of each 30-day period the employees present their hands of five cards, or less, depending upon the number of appliances sold, and the best hand wins first prize. Prizes for these local contests were in cash, ranging from $10 for first prize downward. If the cards on any chart were used up by appliance selling before the end of a 30-day period, additional charts could be prepared.

Scoring for the campaign is in terms of "yards earned," as determined by

(Continued on Page 32)

Leak Clamps *for* Cast Iron Bell Joints

The views above and at the left show a piece of 6-inch pipe with clamp and joint, removed for testing. The pipe and clamp had been installed in 1916.

By HENRY S. HARRIS

Assistant Engineer
Los Angeles Gas and Electric Corp.

UNTIL the introduction of welded steel pipe into the gas industry, it had been the practice to install bell and spigot cast iron pipe using yarn and lead or yarn and cement to effect a sealed joint. The yarn was kept moist and swollen by the wet manufactured gas, and backed up by either the lead or cement offered a sufficient resistance to leakage under low pressure in the majority of cases. Where traffic vibrations were excessive, some leakage occurred but not sufficient to cause an alarming condition. Today the scene has changed. The advent of dry or partly moist natural gas has tended to dry out the yarn of the cast iron joints, and we find in the distribution system of the Los Angeles Gas and Electric Corp. a total of more than 65 per cent of all the bells showing leakage, from a small amount to actually blowing.

About 20 years ago this company purchased a few bell and spigot leak clamps, consisting of two malleable iron split rings, a split rubber ring and bolts to make up the connection. These clamps were installed on some new cast iron pipe laid at that time, the joints first being made up with yarn and lead. We find no reason why the purchasing of these clamps was discontinued at the time, but presumably it was because of the lack of faith in the life of rubber and also because of the possible bolt and clamp metal failure from electrolysis.

Since corrosive soil prevails in Los Angeles and vicinity, we have asked ourselves what may be expected in the use of malleable clamps, rubber gaskets and steel bolts. The fact that malleable iron is electro-positive to an appreciable degree in solution as related to cast iron or steel, would further affect the life of the clamps.

It has been shown in many instances that rubber under compression is quite immune to the destructive effects of gas, oil, solvents or other deteriorating agents, but our question concerned what would happen after the bolts and clamp had corroded away sufficiently to relieve the pressure on the rubber. Fortunately, this trial order purchased some years back offered us a means of determining the ravaging effects of time and corrosion on rubber and metal.

In order to run a satisfactory test it was necessary to find a location where the clamp had not been greatly destroyed by corrosion, and also, where the pipe would not have been graphitized sufficiently to prevent the application of high pressure to the joint. This location was readily taken from our soil corrosivity maps, and a joint was excavated intact, leaving about 12 inches of pipe on either side of it. As little dirt as possible was removed from the clamp and joint. The accompanying views show the piece removed for testing. It is a 6-inch A.G.A. Standard Sand Cast Pipe; the pipe and clamp had been installed in 1916.

Both ends of the pipe were sealed with climax plugs, the joint submerged in water and pressure applied in the following order: 8-inch water column (the working pressure on the cast iron mains in the system), then in turn 20 inches, 1 lb. gage, 2 lbs., 3 lbs., etc., in their respective order to and including 10 lbs., then 15, 20 and 25 lbs. No leakage occurred at any pressure. It is our practice to test clamps and mechanical joints to a higher pressure than 25 lbs., but had we tested this joint to destruction (leakage), our test would have been defeated.

The next step was to duplicate the condition of corroded out bolts and clamp. This was done by sawing away each bolt and removing the clamps in back of the bell. The joint was again submerged and pressure applied in the same order and magnitude as above without indications of a leak. The following and last step was to determine if the rubber had seized to the pipe and was thus sealing the joint or if the joint merely had been well caulked and the lead and yarn were sealing off the gas. Accordingly, the entire clamp was removed from the joint. It was very difficult to pull the rubber away from the clamp or the pipe, and the rubber was found to be in excellent condition. In fact, if we had not torn it in removing it, it could have been used again with perfect confidence.

H. S. Harris

With the rubber removed, the joint was again submerged and pressure applied. At 8 inches water column the joint leaked badly on one side close to the bottom of the pipe, and on applying 20 inches, the joint leaked very fast all around, thus showing that the rubber had seized to the iron and sealed off the leakage.

We have removed more of these clamps from locations where the soil corrosivity index was quite high. In these locations the clamps were so destroyed that they could be chipped away with the adhering dirt, but the entire conglomeration had assisted in keeping the rubber under some pressure, and although the outward side of the rubber was slightly brittle, the part which had seized against the face of the bell was in excellent condition.

Summary of Natural Gas Statistics for 1931

State	Production			Consumption										
				Domestic (inc. commercial)			Industrial							
							Field (drilling, pumping, operating gasoline plants, etc)		Manufacture of carbon black		Fuel at petroleum refineries, electric public-utility power plants, and other industrial			
											Millions of cu. ft.			
	Quantity (millions of cu. ft.)	Estimated average value at wells per M cu. ft. (cents)	Average value at points of consumption M cu. ft. (cents)	Thousands of consumers	Consumption (Millions of cu. ft.	Average value at points of consumption per M cu. ft. (cents)	Millions of cu. ft. (estimated)	Value (thousands of dollars) (estimated)	Millions of cu. ft.	Value at points of consumption (thousands of dollars)	Petroleum refineries	Electric public-utility power plants	Other industrial	Value at points of consumption (thousands of dollars) 1/
Ala.	-	-	-	22	798	127.8	-	-	-	-	-	-	7,950	1,308
Ark.	13,300	5.1	20.3	67	7,623	51.0	10,113	808	-	-	2,117	1,803	10,522	1,853
Calif.	305,930	7.0	25.0	1,346	54,729	91.5	150,331	10,404	-	-	18,234	45,907	36,729	15,847
Colo.	2,536	2.8	37.1	96	5,392	78.4	413	10	-	-	5	150	10,932	2,077
Ga.	-	-	-	61	2,256	113.4	-	-	-	-	-	1,232	1,416	437
Ill.	2,130	7.9	46.9	999	3,631	125.8	2,038	161	-	-	11	-	8,370	1,854
Ind.	1,337	25.6	52.3	66	1,358	105.1	20	5	-	-	-	1,377	1,940	1,098
Iowa	-	-	-	53	471	110.2	-	-	-	-	-	358	2,693	575
Kans.	38,742	8.0	29.7	193	19,402	57.4	10,287	1,201	-	-	2,230	11,315	22,375	5,946
Ky.	27,870	14.9	32.4	130	10,786	50.6	1,315	223	-	-	-	-	3,411	1,010
La.	224,155	2.9	16.8	137	9,690	57.4	11,806	479	52,204	1,467	8,634	18,612	31,040	8,308
Mich.	472	14.4	23.5	3	32	103.1	43	6	-	-	-	-	397	72
Miss.	6,048	4.1	24.1	24	1,961	57.9	13	1	-	-	-	44	2,352	354
Mo.	1,534	8.0	44.7	327	9,734	78.2	7	1	-	-	1,106	1,106	12,308	2,847
Mont.	10,949	4.1	30.1	25	3,804	44.8	890	98	206	4	125	569	2,765	639
Nebr.	-	-	-	43	1,163	89.2	-	-	-	-	-	1,084	2,570	746
N. Mex.	19,354	2.1	12.4	12	1,344	52.2	8,427	700	-	-	-	2,357	315	419
N. Y.	7,868	32.5	68.2	274	15,437	69.3	255	101	-	-	1	25	1,238	756
Ohio	56,326	17.1	56.9	1,198	80,202	63.1	3,643	996	-	-	11	3,180	20,424	9,841
Okla.	253,685	4.4	12.4	247	26,273	47.5	185,915	9,176	(2/)	(2/)	7,510	7,935	2/ 21,316	2/ 4,512
Pa.	74,797	28.2	50.6	665	48,385	61.7	5,039	1,668	-	-	785	54	38,366	12,836
S. Dak.	12	8.3	33.3	12	1,142	49.7	-	-	-	-	-	-	1,661	262
Tenn.	25	16.0	36.0	42	2,748	69.5	-	-	-	-	-	3,729	1,146	899
Tex.	464,580	2.2	15.9	532	42,937	65.0	149,074	11,269	135,653	2,279	25,308	37,028	57,672	17,872
W.Va.	124,797	18.9	46.6	171	22,210	36.9	13,326	2,992	-	-	876	80	18,623	5,342
Wyo.	39,770	2.8	10.4	17	3,479	43.7	18,447	570	(2/)	(2/)	8,595	223	2/ 2,878	2/ 797
Other	219	6.8	45.8	184	3,910	81.7	2	-	7,333	298	-	175	2/ 5,794	1,321
Total 1931	1,686,436	7.0	23.3	6,976	380,897	65.5	571,365	40,469	195,396	4,048	75,548	138,343	322,700	98,030
Total 1930	1,943,421	7.6	21.4	5,448	376,407	63.5	723,165	59,118	266,625	6,002	98,842	120,290	356,315	111,226

1/ Includes value of gas used at petroleum refineries and electric public-utility power plants.
2/ Included under "Other States" for United States total and under "Other Industrial" for State total to avoid revealing figures of individual operators.

1931 Statistics Show Gains *in* Natural Gas Customers

By G. R. HOPKINS

Petroleum Economics Division
United States Bureau of Mines

NATURAL gas production declined in 1931 for the first time in a decade. Total marketable production in 1931 amounted to 1,686,436,000,000 cubic feet, a decline of 256,985,000,000 cubic feet, or 13 per cent, below 1930. This decline may be attributed chiefly to a falling off in demand for field purposes and for the manufacture of carbon black.

The natural gas produced in 1931 had a total value at the wells of $117,505,000 and at points of consumption of $392,816,000.

Of the total 1931 consumption 34 per cent was used for field purposes, 23 per cent for domestic and commercial purposes, 12 per cent in the manufacture of carbon black, 8 per cent as fuel at electric public-utility power plants, 4 per cent as fuel at petroleum refineries, leaving 19 per cent for other industrial purposes. In comparison with 1930, these data represent gains in the proportions distributed for domestic and commercial consumption, electric public-utility power plants and general industrial uses.

The increase of 1.2 per cent in the amount of natural gas served to domestic and commercial consumers was due largely to the opening of several new interstate lines and to the full year's operation of several on which service was inaugurated late in 1930.

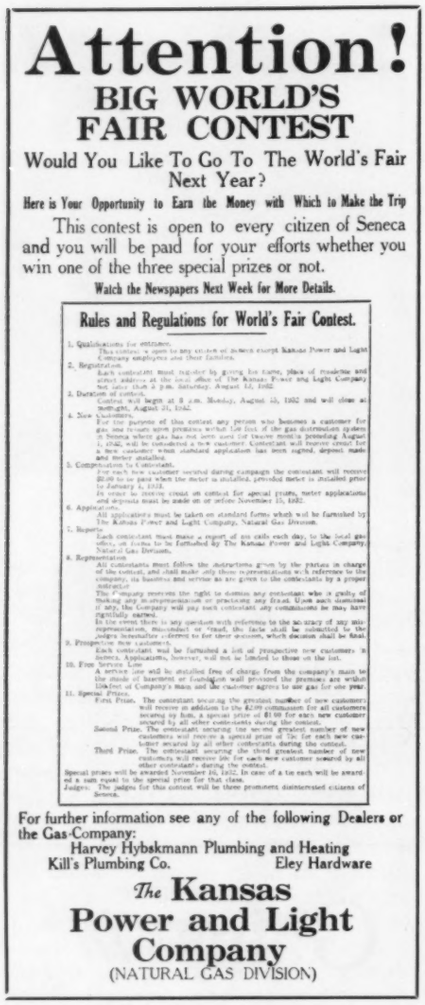
With the exception of 1919, the number of domestic and commercial consumers has shown a steady increase since 1906. In 1931, the number rose to 6,976,000 from 5,448,000 in 1930, a gain of 28 per cent. This material gain resulted primarily from the opening of new lines traversing several States, but it should be noted that many of the new customers were served with mixed gas and may also be considered as consumers of manufactured gas. Accordingly, the decrease in average annual use per consumer from 69,100 cubic feet in 1930 to 54,600 cubic feet in 1931 was considerably in excess of the actual decline.

The average price paid for natural gas by domestic and commercial consumers has shown a steady increase in recent years. In 1931 the average was 65.5 cents per thousand cubic feet, compared with 63.5 cents per thousand in 1930. At least a part of this increase of 2 cents in the average price paid by domestic and commercial consumers was due to the mixing of natural gas with relatively higher priced manufactured gas.

Contrary to popular belief, the use of natural gas for field purposes constitutes the largest item in consumption. Field work fell to a low ebb in 1931—for example, only 12,432 wells were

(Continued on Page 29)

Customers Turn Salesmen *for* Kansas Power *and* Light



Attention!

BIG WORLD'S FAIR CONTEST

Would You Like To Go To The World's Fair Next Year?

Here is Your Opportunity to Earn the Money with Which to Make the Trip

This contest is open to every citizen of Seneca and you will be paid for your efforts whether you win one of the three special prizes or not.

Watch the Newspapers Next Week for More Details.

Rules and Regulations for World's Fair Contest.

1. Qualifications for entrance.
This contest is open to any citizen of Seneca except Kansas Power and Light Company employees and their families.
2. Registration.
Each contestant must register by giving his name, place of residence and street address at the local office of The Kansas Power and Light Company not later than 5 p.m. Saturday, August 13, 1932.
3. Duration of contest.
Contest will begin at 8 a.m. Monday, August 15, 1932 and will close at midnight, August 31, 1932.
4. New Customers.
For the purpose of this contest any person who becomes a customer for gas and resides upon premises within 150 feet of the gas distribution system in Seneca where gas has not been used for twelve months preceding August 1, 1932, will be considered a new customer. Contestant will receive credit for a new customer when standard application has been signed, deposit made and meter installed.
5. Compensation to Contestant.
For each new customer secured during campaign the contestant will receive $2.00 to be paid when the meter is installed, provided meter is installed prior to January 1, 1933.
In order to receive credit on contest for special prizes, meter applications and deposits must be made on or before November 15, 1932.
6. Applications.
All applications must be taken on standard forms which will be furnished by The Kansas Power and Light Company, Natural Gas Division.
7. Reports.
Each contestant must make a report of all calls each day, to the local gas office, on forms to be furnished by The Kansas Power and Light Company, Natural Gas Division.
8. Representation.
All contestants must follow the instructions given by the parties in charge of the contest, and shall make only those representations with reference to the company, its business and service as are given to the contestants by a proper official.
The Company reserves the right to dismiss any contestant who is guilty of making any misrepresentation or practicing any fraud. Upon such dismissal if any, the Company will pay such contestant any commissions he may have rightfully earned.
In the event there is any question with reference to the accuracy of any misrepresentation, misconduct or fraud, the facts shall be submitted to the judges hereinafter referred to for their decision, which decision shall be final.
9. Prospective new customers.
Each contestant will be furnished a list of prospective new customers in Seneca. Applications, however, will not be limited to those on the list.
10. Free Service Line.
A service line will be installed free of charge from the company's main to the inside of basement or foundation wall provided the premises are within 150 feet of Company's main and the customer agrees to use gas for one year.
11. Special Prizes.
First Prize. The contestant securing the greatest number of new customers will receive in addition to the $2.00 commission for all customers secured by him, a special prize of $1.00 for each new customer secured by all other contestants during the contest.
Second Prize. The contestant securing the second greatest number of new customers will receive a special prize of 75c for each new customer secured by all other contestants during the contest.
Third Prize. The contestant securing the third greatest number of new customers will receive 50c for each new customer secured by all other contestants during the contest.
Special prizes will be awarded November 16, 1932, in case of a tie each will be awarded a sum equal to the special prize for that class.
Judges. The judges for this contest will be three prominent disinterested citizens of Seneca.

For further information see any of the following Dealers or the Gas Company:
Harvey Hybskmann Plumbing and Heating
Kill's Plumbing Co. Eley Hardware

The **Kansas Power and Light Company**
(NATURAL GAS DIVISION)

A LOAD-BUILDING campaign which was outstandingly successful in a small Middle-Western town on a large natural gas system is reported by J. A. Bell, commercial manager for the Kansas Power and Light Co. and Kansas Pipe Line and Gas Co., Salina, Kan. The campaign took the form of a contest among customers of the company with the prizes being in cash and advertising playing up the appeal of a trip to the World's Fair in Chicago. During the period of this specialized sales effort, from August 15 to August 31, a gain of 75 per cent was made in customers in Seneca, Kan.

Seneca is a town of 1,894 population. Between the time that natural gas was turned on in December, 1930, and August, 1932, the company was able to install only 168 meters. The new business department, with Mr. Bell, went into conference and decided to put forth a special effort to add more meters on the K. P. L. system in Seneca. A customer contest was the means decided upon, and was thrown open to everybody in town except employees of the company. During the 15-day period 136 new customers were signed up—a phenomenal gain of 75 per cent, and in addition much interest was aroused in the purchase of new gas appliances.

Before the contest began, all of the gas appliance dealers in town were brought together by the gas company and informed of the details of the plan, not only for adding new gas load, but for developing a market for appliances. One hundred per cent cooperation was received, with dealers offering special prices on equipment sold during the period, and the company tying in the appliance sales theme in its load-building advertising.

Attention was also called in the advertising copy to the fact that the company would install free gas service lines, using local labor for the work.

Each contestant was paid for his work, regardless of his standing in the contest, and in addition special prizes were given. The company paid $2 for each new customer signed up, the contestant securing the greatest number of customers receiving also a special prize of $1 for each new customer acquired by all other contestants during the campaign. The contestant signing up the second largest number of new customers received a special prize of 75 cents on the same basis, and the third most successful contestant was paid a bonus of 50 cents per customer in addition to the $2 paid for each customer signed by all contestants.

The following rules and regulations were set up by the new business department of the Natural Gas Division, Kansas Power and Light, effective during the campaign:

1. *Qualifications for entrance:*

   This contest is open to any citizen of Seneca except Kansas Power and Light Co. employees and their families.

2. *Registration:*

   Each contestant must register by giving his name, place of residence and street address at the local office of The Kansas Power and Light Co. not later than 5 p.m. Saturday, August 13, 1932.

3. *Duration of contest.*

   Contest will begin at 8 a.m. Monday, August 15, 1932 and will close at midnight, August 31, 1932.

4. *New Customers*

   For the purpose of this contest any person who becomes a customer for gas and resides upon premises within 150 feet of the gas distribution system in Seneca where gas has not been used for the 12 months preceding August 1, 1932, will be considered a new customer. Contestant will receive credit for a new customer when application has been signed, deposit made and meter installed.

5. *Compensation to Contestant.*

   For each new customer secured during campaign the contestant will receive $2, to be paid when the meter is installed,

(Continued on Page 30)

▲

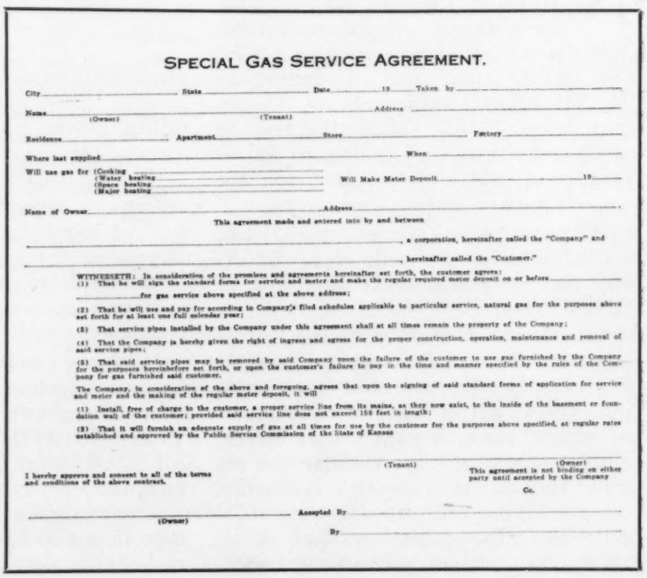
ABOVE:

Newspaper copy effectively tied in load-building and dealer appliance sales.

AT RIGHT:

A special gas service agreement was used by contestants in signing up new customers.

▼



SPECIAL GAS SERVICE AGREEMENT.

City ..... State ..... Date ..... 19..... Taken by .....

Name ..... Address .....
(Owner) (Tenant)

Residence ..... Apartment ..... Store ..... Factory .....

Where last supplied ..... When .....

Will use gas for (Cooking / Water heating / Space heating / Major heating) ..... Will Make Meter Deposit ..... 19.....

Name of Owner ..... Address .....

This agreement made and entered into by and between

..... a corporation, hereinafter called the "Company" and

..... hereinafter called the "Customer."

WITNESSETH: In consideration of the promises and agreements hereinafter set forth, the customer agrees:
(1) That he will sign the standard forms for service and meter and make the regular required meter deposit on or before .....

.....for gas service above specified at the above address;

(2) That he will use and pay for according to Company's filed schedules applicable to particular service, natural gas for the purposes above set forth for at least one full calendar year;

(3) That service pipes installed by the Company under this agreement shall at all times remain the property of the Company;

(4) That the Company is hereby given the right of ingress and egress for the proper construction, operation, maintenance and removal of said service pipes;

(5) That said service pipes may be removed by said Company upon the failure of the customer to use gas furnished by the Company for the purposes hereinbefore set forth, or upon the customer's failure to pay in the time and manner specified by the rules of the Company for gas furnished said customer.

The Company, in consideration of the above and foregoing, agrees that upon the signing of said standard forms of application for service and meter and the making of the regular meter deposit, it will

(1) Install, free of charge to the customer, a proper service line from its mains, as they now exist, to the inside of the basement or foundation wall of the customer; provided said service line does not exceed 150 feet in length;

(2) That it will furnish an adequate supply of gas at all times for use by the customer for the purposes above specified, at regular rates established and approved by the Public Service Commission of the State of Kansas

..... (Tenant) (Owner)

I hereby approve and consent to all of the terms and conditions of the above contract. This agreement is not binding on either party until accepted by the Company

Co.

..... Accepted By .....
(Owner)

By .....

IN this paper from the program of the Natural Gas Department, American Gas Association, given at the Atlantic City sessions in October, Mr. Griffith brings forceful comment upon some current tendencies in utility regulation as he sees them. He challenges the justice of general rate lowering for utility services, pointing out that the utility's chief cost elements are in many cases even higher than in more prosperous years. In some few cases, says Mr. Griffith, utility commissions have virtually been dictated to by state executives to effect uneconomic rate reductions. He calls for a consistent attitude on the part of utilities in their appearances before regulatory commissions, urging that fair and fearless presentation of facts is more than ever necessary.—Editor.

The Attitude *of* Utility Commissions Toward *the* Utilities

By KARL F. GRIFFITH

Chief Counsel
Lone Star Gas Company

THE Interstate Commerce Commission and the various public utility commissions were created, presumably, to correct railroad and public utility abuses and discriminatory practices. Somewhere in the provisions of the laws creating these commissions, we find language which in substance authorizes the commissions to fix and prescribe reasonable rates and charges. Such language has been judicially interpreted to mean that the rates so fixed and promulgated shall be reasonable, not only to the public, but as well to the public utility. This latter interpretation, sound because otherwise constitutional rights would be violated, has in many states been utterly ignored in the last two years, and probably the primary cause is the economic depression which everywhere has made for the cry, "Everything else is coming down, so why not public utility rates?" The public, and in many cases the commissions, have ignored the obvious fact that public utility rates are not predicated upon all-commodity price levels. Held to the limit of a fair return in years of prosperous business, there is no legal or moral reason for compelling a utility to work at starvation wages during a business depression.

We hear the contention that everything which the utility buys has decreased in price and therefore reduced rates are justified. Splendid, if that were true, but it is not. Is the cost of money cheaper? What about insurance and railroad freight rates? All of these costs are higher than in the prosperous years just past. And is it necessary to state that taxes have increased rather than decreased? Lastly, what is the volume of business today as compared with the volume in the so-called prosperous years? Hardly a utility in the natural gas industry has escaped the downward trend both in numbers of connected customers and in sales per customer. Operating economies, although somewhat effective, have not succeeded in maintaining even reasonable earnings for the public utilities and their security holders.

But, as Grover Cleveland once said, we are confronted with a condition and not a theory in this present day attitude of the utility commissions and the public toward the utility companies.

Persecution—not Regulation

In three states—and I shall not hesitate to name them; they are Kansas, Oklahoma and Pennsylvania—the chief executive has seen fit to virtually dictate to the state utility commission as to the policy to be pursued in connection with the regulation of rates and, to be more specific, the policy to be pursued in connection with the reduction of public utility rates. This presents an unparalleled situation in American public life, and is unquestionably at variance with the idea which the American public has always held, that public utility commissions are and should properly be fair and impartial tribunals to be governed by the evidence produced at the hearings in respect of any public utility to be affected by a commission order. In states other than those mentioned, there has been a determined effort on the part of the chief executive to change the personnel of the commission so that the domination of the chief executive would be complete in rate regulatory matters. All of this has made for a situation in which the public utilities are being denied that fair and impartial hearing to which they are entitled, even before a legislative body.

Probably the commission which has invited the most attention within the last year is the Wisconsin Commission, due primarily to its decision in the celebrated Wisconsin telephone case. In that case, the commission abandoned the long established practice of determining a rate base, and seems to have fixed rates upon the ability of the customer to pay rather than upon the amount necessary to give the telephone company a fair rate of return upon the fair value of its property. The outcome of this order of the commission is not yet, and will doubtless be finally determined by the Supreme Court of the United States. If the theory of the Wisconsin Commission should prevail, then all of the law relative to the regulation of public utility rates will thereby have been abandoned and we must all start anew. Outside of Wisconsin, the decision of the commission of that state has not met with general approval, even on the part of the press of the nation. One of the most striking of press comments is contained in the editorial columns of the New York Sun, in the issue of August 31, 1932, and we quote from that editorial in part:

"* * * * * It (the commission) proposes an arrangement under which in effect the income of the customer, not the investment of the company, would be the determining factor in fixing rates. That is, a company would be compelled to charge what some regulatory body decided its customers were able to pay, not what it ought in fairness to get in return for the investment required to furnish a desired service. It is not a wholly illogical distortion of this proposal to suppose that, if customers were not able to pay anything, the State would compel the companies to furnish service free of charge.

* * * * * *

"There is another and more sinister probability. Politics and politicians being what they are, it would inevitably happen that popular pressure would persuade some reg-

(Continued on Page 30)

Pacific Coast Gas Association

Managing Director: Clifford Johnstone
Association Headquarters:
447 Sutter Street, San Francisco

President: H. L. Masser
Vice-President and Executive Engineer,
Los Angeles Gas and Electric Corp.

Organization Conference—December 14-15

THE Annual Organization Conference of the Association will be held in San Francisco on December 14 and 15 in order to take advantage of the elaborate Home Appliance Exposition being planned by the Pacific Gas and Electric Co. for December 13 to 15 inclusive. This Exposition is an innovation in gas and electric sales promotion, and coming as it does early in the holiday season should do much to inspire Bay District folk with the true spirit of Christmas which is built around the home with its savory odors of cooking and its bright, cheerful warmth. The Exposition will be held in the Civic Auditorium and will be open to the public.

Detailed plans for the conference will be mailed to all Association members about December 1 and also printed on this page next month. In general they will include separate meetings of the several Sections during the day of December 14 and a huge gas industry rally and banquet in the evening arranged in cooperation with the Gas Appliance Society and attended by manufacturers and dealers. Section meetings will be continued on December 15.

Committee Assignments for 1932-33

COOPERATIVE ADVERTISING

President H. L. Masser has appointed the following committee to take charge of the Association's Cooperative Advertising during 1933: Douglas Buckler, Southern California Gas Co.; J. Earl Jones, Seattle Gas Co.; J. Chas. Jordan, Pacific Gas and Electric Co.; F. U. Naylor, Pacific Gas and Electric Co., and E. P. Ramsay, Los Angeles Gas and Electric Corp.

ACCOUNTING SECTION

Chairman R. N. Dreiman has appointed W. J. McCoy, Southern Counties Gas Co., as Vice-Chairman of the Accounting Section. Among the more important studies to be made by the Section this year are those relating to Classification of Accounts, Merchandise Accounting, Fixed Capital Records, Collections, and Consumers' Deposits. Many of these studies will be made jointly with the Accounting Section of the Pacific Coast Electrical Association.

PUBLICITY AND ADVERTISING SECTION

Due to the fact that F. H. Holden, Chairman of the Publicity and Advertising Section, has assumed new duties which will make it impossible for him to serve in this capacity, President Masser has appointed Eugene P. Ramsay, Vice-President of the Section, as acting chairman. Mr. Ramsay is well known in Pacific Coast advertising circles and served last year as Chairman of the Publicity and Advertising Section of the Pacific Coast Electrical Association.

TECHNICAL SECTION

Under the leadership of Chairman Guy Corfield, the Technical Section program is already well under way. Mr. Corfield reports the following developments during the month.

Natural Gas Transmission Committee

Chairman B. M. Laulhere has appointed C. S. Pool, Industrial Fuel Supply Co., as chairman of the Committee on Compressor Stations. The committee will continue its study of air filters for gas engines and investigate the use of draft inducers at compressor stations, and the use of metal spray on exhaust pipes.

Lester F. Reets, Pacific Gas and Electric Co., has accepted the chairmanship of the Committee on Large Volume Measurements. Topics for study include Critical Flow Orifice Provers, Deviation from Boyles Law, Rotary Meters, and Refinements in Temperature Measurements.

Ralph Cook, Southern California Gas Co., will act as chairman of the Transmission Pipe Line Committee. The committee will devote itself to a continued study of Internal Corrosion and its Mitigation, the Effect of Expansion and Contraction in Pipe Lines, and a comparative study of Welding Procedure.

Distribution Committee

Chairman F. A. Hough has organized a very full and complete program of distribution studies.

O. L. Wrestler, Los Angeles Gas and Electric Corp., will continue as chairman of the Pipe Protection Committee studying particularly Cathodic Protection, Electrolysis, and the Relation of Actual Pipe Life to Soil Survey Predictions.

William A. La Violette, Pacific Gas and Electric Co., will again act as chairman of the Committee on Governors and Regulators, and will continue the intensive study of Flow through Regulators begun last year under his leadership.

Committee work on Distribution Design will go forward with N. L. Hoff of the Los Angeles Gas and Electric Corp. again serving as chairman.

A new committee on Distribution Pressure Control headed by Henry Harris, Los Angeles Gas and Electric Corp., will make an economic study of Distribution Pressures and their regulation as they affect leakage, costs and service.

Another new committee, Safe Gas Distribution Practice, has been organized under the leadership of Carl Renz, Los Angeles Gas and Electric Corp. The committee will report on safety devices and methods as applied to the distribution and utilization of gas.

H. W. Geyer, Southern Counties Gas Co., will head a committee to study appliance servicing methods and practice with particular attention to training and appearance of personnel and reasonable costs in urban and suburban territory.

Production Committee

Chairman C. P. Johnson has appointed T. N. Kellett, Los Angeles Gas and Electric Corp., chairman of a committee to study problems in connection with holder maintenance. The value of various preservative paints and oils will be one subject to which Mr. Kellett's committee will give considerable attention.

J. M. North, Los Angeles Gas and Electric Corp., will head the Chemical Committee. Refinements in natural gas analysis precedure is one topic assigned to this committee.

Range Manufacturers Meet on October 6

On October 6 the members of the Range Division, Manufacturers Section, met in Los Angeles to further discuss the national advertising of gas ranges. The Manufacturers Section of the American Gas Association was represented at the meeting by John A. Fry, Chairman of its National Advertising Committee, and by Bradley Walker, Vice-President of the Campbell-Ewald Co. of Detroit. Andrew Kerr, Chairman of the Range Division, reports that while no definite decision was reached at the meeting, there is every prospect that a plan may be worked out whereby the Pacific Coast Manufacturers' group may participate in the constructive plans outlined by Mr. Fry.

A Corporation for Cross-Licensing Range Patents

At the Annual Meeting of the Manufacturers' Section of the American Gas Association held in Cincinnati on September 30, approval was given to the formation of the Gas Range Manufacturers' Corp., the principal purpose of which will be to act for its members in matters relating to patents and patent rights. Full information regarding the corporation and its powers has been sent to all gas range manufacturers, soliciting their membership and cooperation. The corporation will become operative only after manufacturers representing 50 per cent of the gas range production of the country have applied for membership.

California State Bureau of Commerce

SIMON J. LUBIN, Chief of the Bureau of Commerce, State of California, has recently issued a leaflet describing the service the Bureau is prepared to render to California industries.

The Bureau is ready to assist California business in all matters dealing with domestic or international commerce such as advising on markets, new products, or distribution methods. Its work is divided into four divisions, The Domestic Trade Division, The International Trade Division, The Division of Displays, and The Division of Information. The Domestic Trade Division maintains traveling field agents engaged in introducing California products and finding markets for them in other states. The International Trade Division has established close contacts with foreign consular officials and with foreign importing firms. The Division of Displays has a permanent exhibit of California products in its offices at San Francisco and invites manufacturers to display their products for the benefit of the many exporters and foreign buyers who visit these offices. The Division of Information is prepared to obtain practical market information from all parts of the world.

The Pacific Coast Gas Association will be glad to act for any of its members desiring to consult the Bureau on any matter.

New Publications Added to Association's Files

DURING October a number of interesting pamphlets have been added to the Association's Library:

Housing and the Community and Home Repair and Remodeling. Reports to the President's Conference on Home Building and Home Ownership.

Homemaking, Home Furnishing and Information Services—A Report to the President's Conference on Home Building and Home Ownership.

The American Consumer Market—A survey of expenditures in the United States for commodities and services for the years 1919 to 1930. A study made by "Business Week," a McGraw-Hill publication.

The Deterioration of Domestic Chimneys, by J. E. MacConachie. Published by the Consumers' Gas Co. of Toronto, Canada.

House Insulation—Its Economies and Application. Published by U. S. Department of Commerce.

Company Plans for Unemployment Reserves. Published by the U. S. Chamber of Commerce.

Hearing before the Senate Committee on Post Offices and Post Roads on an act to curb the practice of depositing unmailed matter in private letter boxes. Also a memorandum prepared by Carl D. Jackson on this subject for the American Gas Association.

A Study of the Characteristics of Burning Gas with Pre-heated Air. Report No. 685 of the American Gas Association Testing Laboratory.

Research in the Elimination of Noise in Industrial Gas Burners. Report No. 692 of the American Gas Association Testing Laboratory.

Standard Nomenclature for Industrial Gas Combustion Systems. Report No. 694 of the American Gas Association Testing Laboratory.

Meeting Oil Competition in Commercial Kitchens. Special Industrial Service Letter No. 9, American Gas Association.

Removal of Soot from Furnaces and Flues by the Use of Salts or Compounds. Bulletin 360 of the U. S. Department of Commerce, Bureau of Mines.

Clinker Formation as Related to the Fusibility of Coal Ash. Bulletin 364 of the U. S. Department of Commerce, Bureau of Mines.

Montana Dakota Utilities Sets Up New Rate Schedule

New rates for Montana-Dakota Utilities Co., Bismarck, N. D., have been approved by the Board of Railroad Commissioners of North Dakota, and include the following:

A general purpose rate, available for all classes of service, including domestic, commercial and industrial consumers whose annual bill will be less than $300. This rate begins with a minimum of 85 cents per M c.f. for the first 3,000 cubic feet or less per month and steps down to 35 cents per M c.f. for all over 100,000 cubic feet.

The combination commercial space heating, water heating and cooking rate is available for all classes of service including residential, commercial and industrial where gas is used exclusively for space heating purposes and when a customer signs a contract agreeing to pay a minimum annual bill of $300. The following rates obtain under this schedule: First 200,000 cubic feet or less consumed per month, 30 cents per M c.f.; next 200,000 cubic feet or less 25 cents per M c.f. All over 400,000 cubic feet consumed per month 22½ cents per M c.f.

A schedule set up for small industrial consumers, such as dairies, laundries, brick plants and greenhouses, contracting to use or pay for $600 worth of gas per year consumed uniformly throughout the 12 months of the year gives a rate of 25 cents per M for first 6,000,000 cubic feet consumed annually. All over 6,000,000 will be charged for at 20 cents per M c.f. The $600 per year is to be billed in such a manner that at the end of any monthly period the customer will have paid the company an amount equal to the number of months covered, times one-twelfth the annual minimum bill.

Personnel Changes Announced by Southern Calif. Gas Co.

Several changes are announced in the personnel of Northern, Southern and Central Divisions of the Southern California Gas Co., Los Angeles, Calif.

J. E. Kern, for some time sales supervisor in the central division, has been named assistant to H. E. Davidson, superintendent of appliance sales. The position of sales supervisor for the Central Division has been taken by P. C. Hargrave, formerly sales supervisor of the Northern Division at Glendale. J. H. Ragsdale takes Mr. Hargrave's place at Glendale.

W. G. H. Russell, for several years district agent at Van Nuys, has been transferred to Compton, where he takes the place of Samuel King, district agent there. Mr. King has been transferred to the Los Angeles office of the company. G. W. Hackley, district agent at Burbank, has taken Mr. Russell's post at Van Nuys, and Mr. Hackley's position was taken by W. O. Mulligan.

W. M. Jacobs, formerly assistant industrial engineer for the Eastern Division at San Bernardino, has been transferred to the Central Division as sales engineer. E. J. Strickland, formerly sales engineer for the Central Division, is now office engineer at the Los Angeles office.

Stability of Gas Industry is Keynote of 14th A. G. A. Convention

Arthur Hewitt
President

BELOW:

N. C. McGowen
Vice-President

G. W. Ratcliffe
Chairman
Natural Gas Dept.

BELOW:

Frank L. Chase
Vice-Chairman
Natural Gas Dept.

REVIEWING a year during which the gas industry has demonstrated its inherent stability, the 14th Annual Convention of the American Gas Association met at Atlantic City, N. J., October 10-12, 1932 with 1,250 registered delegates, and an attendance of approximately 1,500. The fact that there was no general manufacturers' exhibit contributed to the smaller-than-usual attendance, and at the same time focused the interest entirely on general and Sectional sessions.

Officers and Section Chairmen selected to serve during the coming Association year are:

President—Arthur Hewitt, general manager, Consumers Gas Co. of Toronto, Toronto, Ont.

Vice-Presidents—N. C. McGowen, president, United Gas Corp., Houston, Texas; Howard Bruce, chairman of the board, Bartlett-Hayward Co., Baltimore, Md.

Treasurer—William J. Welsh, president, New York and Richmond Gas Co., Staten Island, N. Y.

Directors—R. W. Gallagher, Cleveland, Ohio; H. C. Abell, New York, N. Y.; H. O. Caster, New York, N. Y.; J. S. DeHart, Jr., Newark, N. J.; B. J. Denman, Chicago, Ill; Henry L. Doherty, New York, N. Y.; O. H. Fogg, New York, N. Y.; F. C. Freeman, Providence, R. I.; John A. Fry, Detroit, Mich.; Samuel Insull, Jr., Chicago, Ill.; Conrad N. Lauer, Philadelphia, Pa.; F. A. Lemke, Kalamazoo, Mich.; F. A. Miller, Bradford, Pa.; B. J. Mullaney, Chicago, Ill.; Clifford E. Paige, Brooklyn, N. Y.; Herman Russell, Rochester, N. Y.; F. S. Wade, Los Angeles, Calif.; T. R. Weymouth, New York, N. Y.; P. S. Young, Newark, N. J.

Natural Gas Department—Chairman, G. W. Ratcliffe, president, Manufacturers Light & Heat Co., Pittsburgh, Pa.; Vice-Chairman, Frank L. Chase, Dallas, Texas.

Accounting Section—Chairman, J. M. Roberts, Peoples Gas Light & Coke Co., Chicago, Ill.; Vice-Chairman, E. B. Nutt, Pittsburgh, Pa.

Commercial Section—Chairman, Walter C. Beckjord, vice-president and general manager, Boston Consolidated Gas Co., Boston, Mass.; Vice-Chairman, N. T. Sellman, director of sales, Consolidated Gas Co. of New York, New York, N. Y.

Industrial Section—Chairman, E. L. Wilder, manager gas sales, Utility Management Corp., New York, N. Y.; Vice-Chairman, F. B. Jones, director, industrial gas sales, Equitable Gas Co., Pittsburgh, Pa.

Manufacturers Section—Chairman, D. B. Stokes, vice-president, United States Pipe & Foundry Co., Burlington, N. J.; Vice-Chairman, John A. Fry, vice-president, Detroit-Michigan Stove Co., Detroit, Mich., and Merrill N. Davis, vice-president, S. R. Dresser Manufacturing Co., Bradford, Pa.

Publicity and Advertising Section—Chairman Jay C. Barnes, director of advertising, New Orleans Public Service Inc., New Orleans, La.; Vice-Chairman, Henry Obermeyer, assistant to the president, Consolidated Gas Co., New York, N. Y.

Technical Section—Chairman, J. A. Perry, assistant to the vice-president, United Gas Improvement Co., Philadelphia, Pa.; Vice-Chairman, O. S. Hagerman, engineer, American Light and Traction Co., Chicago, Ill.

The first general session was held on Monday evening following Sectional meetings during the day, and was given over largely to the presentation of awards.

Hugh Cuthrell, manager new business, Brooklyn Union Gas Co., Brooklyn, N. Y., received the Charles A. Munroe Award for outstanding work in the industry, his particular achievement being outstanding work in the gas merchandising field.

B. B. Harper, vice-president, Peoples Gas Light & Coke Co., Chicago, received the Beal Medal for his paper on "Gas Flames in Conversions to New Gases," presented before the Technical Section during the 1931 convention of the A. G. A.

A. G. A. President R. W. Gallagher, president of the East Ohio Gas Co., Cleveland, gave his address at the second general session, held Tuesday morning. In his talk, Mr. Gallagher stressed the opportunity which the Association has during this particular period for strengthening its service to the industry. During this session, W. J. Welsh, treasurer, and Alexander Forward, managing director, presented their annual reports. Also scheduled for the day were meetings of the Accounting, Commercial, Industrial Gas and Technical Sections. The evening was given over to a program of entertainment.

The program was completed on Wednesday with the third General session, a Home Service luncheon, and meetings of the Commercial, Industrial Gas and Technical Sections.

At no previous Atlantic City Convention has there been so large an attendance at the Natural Gas Department meeting, held on the opening day. Major T. J. Strickler, Chairman of the Natural Gas Department, A. G. A., presided at this session, which featured numerous short addresses and reports.

Among those on the program were R. W. Hendee, then vice-president and now president of the Oklahoma Natural Gas Corp.; A. W. Ambrose, assistant general manager, Empire Gas & Fuel Co., Bartlesville, Okla.; F. M. Banks, general sales manager, Southern California Gas Co., Los Angeles, Calif.; F. H. Brooks, president, Northern Gas and Pipe Line Co., Omaha, Neb. and Karl F. Griffith, chief counsel, Lone Star Gas Co., Dallas, Texas.

Committee reports were brought in by H. C. Cooper, chairman of the Main Technical and Research Committee; by the Gas Well Delivery Committee, chairmaned by N. C. McGowen; and by the Sub-Committee on Gas Measurement. These committees are three of several that have practically completed their program of research begun several years ago. All completed reports are shortly to be printed, according to A. E. Higgins, secretary of the Natural Gas Department.

A new committee appointed this year as announced by Mr. Higgins is the committee on Pipe Line Crossings Under Railroads. Floyd C. Brown, general manager, Natural Gas Pipe Line Co. of America, Chicago, has the chairmanship.

In outlining plans for the Department's work this coming year, Mr. Higgins stated that all present committee work will be continued. The program will principally center, he stated, on gas utilization, the development of markets for both domestic and industrial gas; and upon the development and sale of by-products of surplus natural gas.

The 1933 Convention of the American Gas Association is scheduled to be held in Chicago, Ill., during the week of September 25, giving members an opportunity to attend both the annual meeting and the World's Fair.

1932-33 Calendar

December

Southern California Meter Association—Exhibitors' Meeting, Los Angeles, Calif., Dec. 1, 1932.

12th Annual Meter Short Course and Conference — Ames, Iowa, Dec. 6-9, 1932.

Pacific Coast Gas Association—Organization Conference, San Francisco, Calif., Dec. 14-15, 1932.

January

National Bottled Gas Association—January, 1933.

September

American Gas Association—15th Annual Convention, Chicago, Ill., week of Sept. 25, 1933.

R. W. Hendee Named President Oklahoma Natural Gas Corp.

ROBERT W. HENDEE has been elected president of the Oklahoma Natural Gas Corp. to succeed E. A. Olsen, who resigned to accept an executive position in the utility field in the East. Frank E. Kistler at the same time was elected chairman of the board of directors. The changes were made effective October 22, 1932.

Mr. Hendee, as senior vice-president of the company, recently removed to Oklahoma City in charge of the western division. He will return to Tulsa upon the naming of his successor in the Oklahoma City post.

R. W. Hendee

E. A. Olsen

Mr. Hendee, who was born in Rochester, N. Y., and educated in the public schools of East Orange, N. J., went to Oklahoma with his parents in 1913. He later was graduated from Cornell University in mechanical engineering. In 1921, after several years with a natural gas engineering firm, Mr. Hendee joined the Oklahoma Natural organization as assistant superintendent of the gas measurement division. After successive advancements he was made vice-president in 1928 and gradually reached senority among company officials.

Mr. Kistler has been chairman of the finance committee of the Oklahoma Natural and is a resident of Tulsa. He was the organizer and principal owner of the Producers and Refiners Corp., which a few years ago was purchased by the Prairie Oil & Gas Co. He has been associated with Oklahoma oil and gas business for more than 20 years, is widely known in the state's oil, financial and social circles, and has a wide acquaintance among business men of the state, as well as throughout the Mid-Continent territory. He is a director of the Mid-Continent Petroleum Corp. and has been a member of the American Petroleum Institute since its organization.

Bullard of Louisiana P. & L. Patents New Safety Device

C. D. Bullard, superintendent of the gas department, Louisiana Power & Light Co., Algiers, La., has invented and patented an automatic safety valve to shut off automatically, on fall in pressure, gas passing through the valve. The device is a combined valve and shutoff, which after closing automatically is locked against opening except when released by hand. The diaphragm is subject to the pressure of fluid flowing past the valve. A toggle joint is secured to the diaphragm and is adapted to lock the valve in the closed position.

PACIFIC GAS AND ELECTRIC COMPANY

HOME APPLIANCE EXPOSITION

San Francisco Civic Auditorium • December 13 to 15, inclusive

WHO WILL SEE THE EXPOSITION

1. The Public Will See It

The exposition will be open for three days and three nights. The public will be invited to see the most modern approved home appliances, all on display under one roof. This is to be the greatest exposition of domestic appliances ever exhibited in Northern California, and more than $5,000 is to be spent on publicity and advertising to inform the public of this fact. Liberal door prizes are to be offered and special attractions are to be featured.

Conservative estimates of attendance, based upon experience with other expositions, indicate that more than 50,000 people will view this magnificent exposition.

2. All Appliance Dealers and Distributers Will See It

Special invitations will be sent to all retail executives and their complete personnel. The Pacific Coast Electrical Bureau is planning to hold an annual electric industry meeting during the exposition. This will be a banquet in Larkin Hall, during which the complete 1933 electric sales program of the Pacific Gas and Electric Company will be presented.

The Pacific Coast Gas Association and the Gas Appliance Society propose to hold jointly their annual gas industry meeting on another evening, and on this occasion the complete 1933 gas sales plans of the Company will be presented. Each of these meetings has, in the past, been attended by no less than 400 to 500 industry people and by holding them simultaneously with the exposition this attendance should be greatly increased.

3. Executives, Department Heads, Agents, District Managers and Salesmen of the Pacific Gas and Electric Company Will See It

One of the days of the exposition will be devoted to a Pacific Gas and Electric Company convention, attended by executives and dealers from the company's entire territory. This will afford not less than 600 company people opportunity to see the newest and most modern appliances which their industry has to offer, all assembled in one place and in charge of competent agents who can explain the merits of these appliances to them.

THE Pacific Gas and Electric Company is confident that gas and electric appliance sales can be increased substantially during December by an impressive public exposition.

We are therefore initiating a Home Appliance Exposition which is to be held just before Christmas, December 13 to 15, inclusive, in the San Francisco Civic Auditorium. We propose to make it most effective from the standpoint of education and sales promotion, and very inexpensive in so far as exhibiting participants are concerned. This Exposition will consist of both gas and electrical appliances for the home. No commercial, industrial or other non-domestic appliances will be shown.

The Home Appliance Exposition will be held at a time when Christmas is uppermost in every one's mind. We propose, therefore, to dress the entire auditorium in holiday attractiveness with Christmas as the theme of inspiration.

While only manufacturers and wholesalers will participate so that the show will not be unduly commercialized, this theme should help the industry to obtain its fair share of the Public's Christmas buying dollar.

The entire auditorium will be a Christmas glitter with pleasing display backgrounds and beautiful lighting effects. The show will not be arranged with each participant in a booth, as is customary, but appliances will be attractively grouped by types so that visitors may see in one place all the marvelous appliances of each type that this market has to offer.

NOTICE

FOR YOUR CONVENIENCE, an official application form is enclosed. When filling in this form, please indicate the appliances you wish to display at the Home Appliance Exposition. Applications will be entered in the order of their receipt.

FOR FURTHER INFORMATION, CALL THE EXHIBITORS' COMMITTEE

SUTTER 4211, LOCAL 465.

EXPOSITION PROMOTIONAL PLANS

The Pacific Gas and Electric Company is spending a large share of the cost and is going to make all arrangements and do all the work. But in order that the show may be effectively advertised and publicized, exhibitors will be required to contribute to the expenses fund.

Since this is a combination exposition, many manufacturers and wholesalers will wish to participate and space will be decidedly limited. Therefore, in order to discriminate, and so as to base the contributions fairly allocated, we are leaving a standard tariff on each appliance exhibited in accordance with the schedule outlined below.

GAS APPLIANCES

Appliance	Tariff each	Appliance	Tariff each
Ranges	$40	Floor Furnaces	$20
Water Heaters	20	Circulating Room Heaters	20
Refrigerators	40	Radiant Heaters	20
Central Furnaces	40	Incinerators	20
Boilers	40	Laundry Dryers	40

ELECTRICAL APPLIANCES

Appliance	Tariff each	Appliance	Tariff each
Ranges	$40	Floor Polishers	$10
Water Heaters	20	Sewing Machines	20
Refrigerators	40	Large Exit Fans	20
Air Heaters (over 1.5 kw.)	10	Large Motors	20
Water Coolers	40	Sun Lamps	10
Dishwashers (tank type)	40	Small Appliance Stand Irons (Approx. 35 sq. in.)	40
Washing Machines	20	Domestic Lighting Fixtures (Approx. 35 sq. in.)	20
Radios	20	Vacuum Cleaners	10

Each of the foregoing tariffs, on gas and electrical appliances, includes general illumination, backgrounds, decorations, signs, advertising, door prizes, entertainment, janitor and watchman service. Extra service charges will be made for special demonstration privileges, hot gas, electric, water, and sewer connections, etc. Tariffs on all domestic appliances not listed may be had upon request. In the interest of participants and the effectiveness of the show, the Company reserves the right to make any reasonable, non-discriminatory, or equitable decision necessary.

A direct-mail broadside was sent to manufacturers and jobbers, explaining in detail the plans for the Exposition.

Home Appliance Exposition, Dec. 13-15

BEGINNING with December 13, and continuing until the 15th, the Pacific Gas and Electric Co., San Francisco, Calif., is sponsoring a "Home Appliance Exposition" in the San Francisco Civic Auditorium. The exhibit will cover the entire main floor of the building, the public being invited to attend.

Manufacturers and jobbers of both the gas and electric industries are cooperating with the company, and it is anticipated that approximately 200 firms of Northern California will be represented in the exhibits. The Exhibitors' Committee is made up of B. W. Reynolds, O. R. Doerr, W. W. Clark and T. W. Hawley.

More than $5,000 is being spent in advertising and publicity in the district, one item being an interesting broadside prepared as a direct mailing piece and sent to manufacturers and jobbers.

Held at a time when Christmas is near at hand, the exhibit will be aglitter with beautiful lighting effects and pleasing holiday display. The show will be grouped by types of household appliances, not in booths, as is customary, and only manufacturers and wholesales will participate.

The Annual Organization Conference of the Pacific Coast Gas Association will be held on December 14 in San Francisco to give members an opportunity to attend the exposition, and a gas industry banquet and rally has been arranged by the Association in cooperation with the Gas Appliance Society of California for the evening of that day. On this occasion the 1933 sales plans of the Pacific Gas and Electric Co. will be presented. A day of the exposition has been set apart to feature a Pacific Gas and Electric Co. convention, which executives and salesmen of the territory served by the company will attend.

Safety Records Hung Up by Gas Utilities in 1931-32

DURING the week of October 3 to 7, delegates from public utility organizations of the United States met at the Wardman Park and the Shoreham Hotels in Washington, D. C., in annual session. A program was conducted by the Public Utilities Section of the National Safety Council, as a part of the Twenty-First Annual Safety Congress and Exposition. The General Chairman of the Section is C. B. Boulet, Wisconsin Public Service Co. E. J. Kreh, Philadelphia Co., is vice-president in charge of gas interests. Howard M. Shaw, North American Light and Power Co., is secretary.

As indicated by reports from 584 units in all branches, the public utility industry of the United States had during 1931 one of the best safety years in its history. During the past two years public utilities have made, on the average, outstanding records among all industries in the reduction of frequency and severity of lost time injuries. The 233 organizations which have reported each of the last three years to the National Safety Council show a reduction of 48 per cent in accident frequency and 36 per cent in accident severity.

Awards for the annual safety contest of the members of the Public Utilities Section of the National Safety Council covering the period of June 30, 1931-July 1, 1932, were made at the Washington meeting, having been announced previously.

First rank winner in combination gas and electric companies, Group A, was the Wisconsin Public Service Corp., Milwaukee, Wis., with 3 lost time accidents in 2,802,975 man hours. Second place in this group was the Kentucky Utilities Co., Louisville, Ky., with 5 lost time accidents in 4,315,490 man hours; and the third place was taken by Public Service Co. of Northern Illinois, Chicago, Ill., with 43 lost time accidents in 10,962,753 man hours. First mention in the gas company groups A and B was given to Reserve Gas Co., Pittsburgh, Pa., with no lost time accidents in 346,072 man hours.

Telemetering and Remote Control

By RALPH L. COOK
*Southern California Gas Company**

TELEMETERING is the name which has been applied to remote measurement, or the recording or indicating of measured amounts at a considerable distance from the point of measurement. Like all new developments, considerable progress may be expected in the way of refinements in the near future, as the field widens.

Ralph L. Cook

My attention was first called to this new field when a connection was made between the Southern California Gas Co.'s system and the Southern Fuel Co.'s new 26-inch line at a point some 2 miles distant from our gas dispatcher's office. In order to bring out my point clearly, I will review briefly some past history, most of which has been presented before this association previously.

The Southern California Gas Co. some years ago established certain terminal facilities at points where large volumes of gas were turned over to the Distribution Department. Control points were also established in the fields where the gathering lines converged and control over the volumes into the line could be exercised. The responsibility for the proper operation of the system as a whole rests with a chief gas dispatcher, with headquarters in Los Angeles.

In order to function properly, an operator was placed on duty at each station, his orders for gas volumes being transmitted by telephone. He also reported pressures to the control office hourly so that the chief dispatcher was acquainted with conditions over the system at all times. This scheme has worked very well in the past and is still in operation throughout.

When the new connection to the Southern Fuel Co. line was made, the thought was advanced that, if there were some means of controlling volumes from a considerable distance, together with a means of informing the central operator with the pressures and volumes involved so that he might work intelligently, a great saving could be made and a further step taken in the measurement and control of flowing gas.

We investigated all of the remote control devices on the market and decided that a pilot-controlled regulator with the pilot operated by motor rather than by hand would serve the purpose. Several motor-driven devices were submitted which apparently can be applied and should serve the purpose very well. The motor must be reversible, calling for a 3-wire circuit. Two push buttons at the transmitting end are necessary, one of which will open the pilot, the other close it. The motor will stop as soon as contact is broken, making all the intermediate range between an open and a closed position available.

Our next problem was to consider conductor wires between the transmitting and receiving ends. Two systems are available in most cases. Suitable lines can be strung or cable pairs may be leased from telephone or telegraph companies. In discussing this problem with several electrical engineers, they strongly advised the use of underground circuits such as the telephone company uses within the city. Overhead or open circuits are too easily broken, causing interruptions in service all too frequently. This is not, however, as great an item in Southern California as in certain other sections of the country. Breakages usually occur due to storm conditions, namely, lightning and wind. The telephone company informed us that small boys with slingshots and rifles are also a great hazard of the open circuit. Although breaks are more difficult to locate and repair in the cable circuits, they are so infrequent as to far offset the maintenance of the other. In order to eliminate interference with talking circuits in the same cable, the telephone companies are very rigid in their requirements restricting the current flow and frequencies on lines leased from them.

It is therefore necessary to install suitable relays for the motor-operation of a pilot regulator. This equipment may be dispensed with if solenoid valves are used, but the flexibility of the pilot regulator will probably be the determining factor in our case.

The next thought to operate such a system was to keep in front of the operator the necessary information to intelligently know what is going on. In the particular installation which we are now considering, there must be two pressure gauges, one of which will show the main line pressure and the other the pressure on our own system at that point. If the operator wishes to raise his pressure, for example, 10 pounds, he will then push the button to open the pilot. However, with a system consisting of several miles of rather large pipe, considerable time would be required to gain the 10-pound increase and in the meantime the differential presure on the orifice gauge may or may not have exceeded the maximum range of the instrument. It is therefore our wish to install a remote recording device or devices from which may be noted the upstream or supply pressure, the downstream pressure, and the differential pressure, so that accurate measurement may be obtained. In this way the operator can so manipulate his motor pilot that the flow may remain within the range of the meter and still obtain the desired results.

There are numerous methods which may be applied to such remote indicating devices. These are, of course, all electrical and are all variations of several principal or basic methods.

These are, selector methods resembling the well known dial telephone, the balance system such as is applied to several commercial flow meters, remote recording gas calorimeters, pyrometers, etc., the synchronization principle, and methods using variations in electric quantities in circuits connecting the transmitting and receiving points.

As has been previously mentioned, we are sharply limited as to voltage and current if leased telephone wires are used, so that any system to be suitable must operate on the least possible current consumption.

We shall describe briefly several of the available methods.

Some of the electrical quantities which might be varied are resistance, phase and power factor, capacity and inductance. Changes in resistance, with resultant current change, may be measured at the receiving end, or a self-balancing resistance bridge may be used which necessitates a very small current consumption.

Changes in capacity and inductance may be used to change frequency, or changes in inductance alone may be used to operate an inductance bridge.

One commercial instrument produces changes in resistance by means of a manometer in which the mercury makes contact with a series of points connected to varying resistances. The resultant current is measured by a Watt-meter calibrated in terms of flow.

There are several instruments of the Wheatstone Bridge type available in which the resistance is varied by the pressure operating a slide wire mechanism. They are self-balancing by galvanometers of the null point type actuating suitable mechanisms to add or subtract resistance, thereby balancing the bridge. These have the desirable attribute before noted of requiring a minimum of current.

A recent and interesting adaptation of the photo-electric cell has been made by one of the large electric supply companies. This is known as the torque balance system.

In this instrument two photo-electric cells are placed side by side. A small rotating mirror is so arranged as to reflect light from a suitable source onto the photo-electric cells. This mirror is actuated by gauges designed to produce torque. As the mirror turns, more light falls on one tube and less on the other. The resultant difference in output is amplified by vacuum tube amplifiers and is read at the receiving end on a direct current milliammeter.

Changes in frequency offer an interesting field for telemetering. The pressure element may be made to actuate a small condenser, thereby changing the frequency of a vacuum tube oscillator circuit operating against a master oscillator, which sets up a beat frequency which may be transmitted over any existing circuit. At the receiving end the change in beat frequency is recorded, and is calibrated in terms of flow. This system would be somewhat complicated and expensive to install, but would have the great advantage of extremely low current transmision and extreme ease of amplification.

Another type of equipment which has been

* Presented before the Southern California Meter Association, Long Beach, Calif., July 28, 1932.

in use over a period of years deserves mention. It differs radically from those previously mentioned and is not a pressure indicator but registers quantity.

In this equipment advantage is taken of the fact that the specific heat of different gases varies but little.

The gas passes through a chamber filled with electric heater grids where it is heated to a fixed temperature. As there are resistance thermometers on the inlet and outlet sides of the chamber which act as thermostats the temperature rise is always constant for any amount of gas.

As the specific heat of the gas is known and constant, and the temperature rise is a constant, measurement of the electricity used in supplying the heat gives a measurement of the gas passed. This is accomplished by means of a Watt-hour meter calibrated in gas quantity.

This equipment is not of course suitable for the purpose which we have mentioned but might be used successfully in refineries or gas plants.

This brief description does not by any means cover all the possibilities of remote control or telemetering, but will serve to show what has been done and what may be done in the future.

In the preparation of this brief paper, the writer wishes to acknowledge the asistance of M. T. Burton of the Southern California Gas Co., who has explained the theoretical part of telemetering.

In the near future we plan an installation of remote control and suitable meter equipment. Our laboratory is at present making a thorough investigation of the adaptability of present equipment and will recommend the apparatus best suited to our needs. I wish to point out that every terminal station or other control station, such as is generally used in the transmission of natural gas, offers a potential field for the use of such equipment and the release of operators for other duties. Without a doubt, similar situations exist within the petroleum industry, particularly in refinery operation and movement of oil through pipe lines.

Principles and Applications of Pyrometry

By S. F. GODFREY

*Brown Instrument Company**

FIFTEEN or 20 years ago this subject could have been fairly well covered in a paper of average length, but with the advancing strides in pyrometry keeping pace with the demands of industry, we can little more than scratch the surface at this time.

In considering the measurement of temperature it is natural for one to visualize the applications of the industry with which he may be connected. For a moment let us glance over the field in order to get some idea of the importance of temperature measurement to industry in general.

In our automobiles, most of the steel parts must be correctly heat-treated or they will not stand up to hard service. Enameled parts are baked at a definite temperature. Tires would be of questionable value if not vulcanized under very exacting temperature conditions. No refiner of gasoline and lubricating oils could produce results successfully without close temperature control, and in some of the processes today this involves not only high temperatures but those below normal atmospheric as well. Much of the material used in building, such as cement or brick, must be burned at the correct temperature. Wallboard is dried under thermometer control, and lumber driers not only control the temperature but the humidity as well.

The white enamel finish of the hand bowl or bath tub is applied in the form of a powder while the articles are red hot, and the enamel itself is manufactured under temperature control. Table dishes are burnt twice, once for the body and again for the glaze. Many of the foods we eat have seen the inside of a controlled cold storage warehouse, and where manufactured gas is used for cooking, this gas is produced under close temperature control.

And so we could continue, naming one industry after another with variations from the manufacture of glass to galvanizing, or bread baking; in fact, there are few industrial plants today that do not have some temperature problems.

Temperature control is an adjunct to efficient and economical operation. To handle such a variety of applications a number of different types of temperature indicators and recorders are available, those most commonly found in industrial service being:

Resistance Thermometers,
Mercurial Thermometers,
Vapor Tension Thermometers,
Gas-filled Thermometers
Thermo-electric Pyrometers,
Optical and Radiation Pyrometers.

All of these, with the exception of the optical pyrometer, are now available as either indicators or recorders and in addition are adaptable to automatic temperature control.

The ordinary mercurial thermometer was an early device, followed by the gas-filled and vapor tension type which both make use of a metallic bulb connected to a sensitive helix through the medium of a metallic capillary tube. Correctly designed for any particular application, and correctly installed, quite satisfactory service may be obtained. They are limited to a maximum of 200 feet of connecting tube. The necessary size of the bulb, with consequent slow reaction to temperature changes, limits the utility of this type of instrument in modern oil refining practice where an instrument is required to quickly indicate the magnitude of any temperature change.

With all due regard to the importance and utility of these types of thermometers, the maximum practical range of which is approximately 800° F., we will pass on to the thermo-electric type of instrument which has so rapidly taken an important place in modern industry, particularly in oil refining practice.

Although the basic theory upon which these pyrometers operate was acknowledged as far back as 1821, it is only during the present century that they have been used to any appreciable extent in the industries. The earlier models were strictly laboratory instruments, to be handled very carefully and by a skilled operator. Today these instruments have still greater sensitivity and accuracy, but have been perfected to such an extent that it is quite practical to place them in the plant.

Seebeck discovered in 1821 that if, in a closed circuit of two metals, the two junctions are at different temperatures, an electric current will flow in the circuit. The magnitude of this electromotive force depends upon the difference in temperature of the two junctions. If the temperature of one junction is fixed, the temperature of the other junction can be determined by measuring the e.m.f. developed in the circuit, this is the basic principle of thermo-electric pyrometry. The e.m.f., or voltage, developed by a thermo-couple is small, and instruments sturdy enough for industrial service had to be developed before this discovery could be placed to practical service.

A simple thermo-electric pyrometer consists of three parts:

1. The thermocouple of two different metals or alloys, having a fused junction inserted into the heat, while the cold junction protrudes.
2. Two lead wires, formerly of copper, but in modern installations of alloys which permit the extension of the cold junction to the measuring instrument.
3. The measuring instrument, usually calibrated to read directly in degrees Fahrenheit or Centigrade.

Although any two dissimilar metals might be employed for a thermocouple, some combinations are unsatisfactory due to the very small voltage developed. Other combinations may produce a voltage which first increases, then decreases, and finally changes polarity as the temperature increases. Avoiding this latter deficiency, the two main considerations become: Ability to stand up under heat, and development of a relatively large electromotive force.

Thermocouples in practical use today may be roughly classified as follows:

2000° F. to 3000° F.—Platinum-Rhodium thermocouples consisting of one wire pure platinum, the other 87 per cent platinum and 13 per cent rhodium.

1200° F. to 2000° F.—Nickel-Chromium-Nickel-Aluminum thermocouple consisting of one wire 90 per cent nickel and 10 per cent chromium, the other 98 per cent nickel and 2 per cent aluminum.

0-1200° F.—Iron-Constantan thermocouple consisting of one iron wire, the other 40 per cent nickel and 60 per cent copper.

Platinum thermocouples are generally made of .020-inch diameter wire. Obviously, the expense of larger wire would be prohibitive. Base metal thermocouples are usually made of No. 8 B&S gauge wire, but frequently No. 14, No. 20 or No. 25 gauge is used, in order to secure increased sensitivity to quick changes in temperature.

The electromotive force generated by thermocouples is expressed in millivolts. Take the above mentioned three different types of thermocouples, with a cold junction temperature of 75° F. it would take the following temperatures to develop only 10 millivolts from either of them:

Iron-Constantan	407° F.
Nickel-Chromium	508° F.
Platinum-Rhodium	1787° F.

When we consider that it takes 1,500 millivolts to equal the voltage of one dry-cell, the small amount of voltage we have to deal

*Presented before the Southern California Meter Association, Whittier, Calif., September 22.

with in therm-electric pyrometry will be more readily appreciated.

If accurate temperature measurements are to be made, it is just as important to take note of the temperature of the cold end of the thermocouple as it is the hot end. As it is difficult to maintain a constant cold junction temperature, this matter is cared for in modern instruments by the use of thermocouple extension leads and automatic compensation. These leads run to the instrument itself, which is the most logical place for the automatic compensator. Extension leads consist of double conductor wire so matched as to produce the effect of lengthening the thermocouples. Prior to the time that extension leads were available various schemes were devised for maintaining a constant cold junction temperature. As practically all modern instruments are equipped with automatic compensation we will not enter into detail at this time.

Before passing on to the measuring instrument part of the pyrometer circuit, let us mention the importance of the use of pure metals and uniform alloys in the manufacture of thermocouples. Not only must the alloys be homogeneous in order to avoid parasitic currents, but they must be uniformly produced. Every batch of wire used in the manufacture of thermocouples is accurately tested and that which does not measure up to the pyrometer manufacturers standard is discarded.

Thermocouple heads of the enclosed type should be used wherever possible, particularly in outdoor application. At the same time they must be of a design to permit ready removal of the thermocouple wires for examination or renewal.

Protecting tubes or wells, of which a very large variety are now available, must be chosen with great care and due regard to the application. They must withstand the corrosive action of the medium into which they are inserted, be impervious to gases at high temperatures and pressures, and particularly in oil refinery work, must not be of sufficient bulk to neutralize the benefits to be derived from the use of small wires in thermocouples. A thermocouple well of too heavy construction will greatly reduce the response to sudden changes in temperature and in addition, if not properly installed, cause an error due to heat conductance to atmosphere.

There are two types of instruments for use in measuring the e.m.f. generated by a thermocouple in general use today; the calibrated galvanometer, or millivoltmeter, and the potentiometer type. Instruments of either type are available as indicators, recorders or controllers, and a combination of these functions. Either type has its points of merit and attendant conditions should be considered in selection.

All millivoltmeters operate on the d'Arsonval principle, using a moving coil mounted between the poles of a thoroughly aged and permanent magnet. They are direct reading, the pointer being attached securely to the coil. This coil may be mounted in jewel bearings or suspended by a torsion wire, the former method is in general use for this type of instrument. The current generated by the thermocouple is led to the coil through flat spiral springs which, in addition to performing this function, tend to control the amount of deflection. Calibration is effected by the adjustment of a series resistance.

The simplicity of this type of instrument has met with great favor and improved construction, permitting a high internal resistance, has resulted in a high degree of accuracy. In the early days, some 15 or 20 years ago, available instruments had an internal resistance of 5 or 6 ohms; this meant that a slight change in length of connecting leads had a material bearing on the calibration. Today, instruments of 500 or 600 ohms resistance are in general service, and in spite of the higher resistance of extension leads, this old source of error is no longer serious.

It has already been mentioned that modern installations extend the cold junction to the instrument. In the millivoltmeter, variations in temperature at this point are compensated for through the medium of a bimetallic spiral action on the control springs. The function of this spiral is to automatically correct the setting of the pointer in keeping with the variation in temperature of the cold junction. Owing to the fact that every millivoltmeter is also provided with zero adjustment, it will readily be appreciated that one would not be able to correctly adjust the so-called "mechanical zero" without knowing the actual temperature of the cold junction. This difficulty is overcome by the installation of a second spiral at the zero end of the scale, this moves only to the extent of any change in cold junction temperature, and if the operator wishes to check his zero he has merely to set the instrument pointer in agreement with the pointer carried by this second spiral. In addition to compensating for variation in cold junction temperature, this system also compensates for any temperature coefficient of the instrument itself.

Recorders of the millivoltmeter type were first available in the circular chart type. The advantages of the continuous chart have caused it to almost entirely displace the earlier type. Hand-wound clocks have given way to electric clocks. Records are made through the medium of a carbon ribbon using a principle analagous to that of the visible typewriter. Single record, duplex and multiple record instruments are now available. Instruments of either indicating or recording type can be equipped with contacts for the automatic control of valves or other apparatus.

Pyrometers of the potentiometer type are similar to millivoltmeters to the extent that they also employ a d'Arsonval galvanometer which, however, is not calibrated and serves only to detect a flow of current. Galvanometers of the suspension type lend themselves readily to this application and granted sufficient sensitivity to permit the use of a relatively strong suspension, give excellent service.

The potentiometer type of pyrometer in general service uses the "null" method, by which we mean that there is no current flow from the thermocouple when an exact balance is obtained and the temperature reading is taken. This fact makes it possible to disregard the resistance of the thermocouple circuit in all normal applications. In the millivoltmeter we have a calibrated galvanometer, but in the potentiometer we have a calibrated slide wire and use the galvanometer to detect current flow. Each potentiometer is equipped with a standard cell. This cell delivers an absolutely constant voltage but is not capable of delivering the small current required in operation without upsetting its voltage characteristics. We therefore take an ordinary dry-cell and by a suitable rheostat, adjust its voltage to exactly equal that of the standard cell. For this purpose the galvanometer of the instrument is used and a balance is effected when no deflection is obtained. This dry-cell then supplies a constant flow of current through the slide wire resistance with the result that a definite difference of potential will exist at any given point along the slide wire. When measuring the e.m.f. of a thermocouple, this e.m.f. is connected in opposition to that existing across the slide wire which is then adjusted until a balance is indicated by the galvanometer. Any motion of the slide wire contact in obtaining this balance is directly indicated on a calibrated scale.

The ordinary indicating potentiometer is not what is generally termed "direct-reading," for it must be balanced by hand every time a reading is taken. In recorders, however, this operation is performed mechanically every few seconds and the recording pen records every adjustment made, on a wide continuous chart.

Potentiometers are of course equipped with automatic cold junction compensation, the theory of which differs from that of the millivoltmeter inasmuch as the temperature coefficient of a small spool of nickel wire functions to bring about the same net result.

The mechanism of a recording potentiometer is driven by an electric motor which should be of the synchronous, or constant speed type, in order to maintain accurate chart timing. The slide wire is the calibrated part of the instrument and must be suitably protected from wear and corrosion.

In the sphere of automatic temperature control either the millivoltmeter or the potentiometer lend themselves admirably to the operation of motorized valves, signal lights or other functions. The early "on and off" type of control, whereby the valve was made to take a definite open or closed position, was quickly followed by the "three position" mechanism. This gave the advantage of stopping the valve half way when moving in either direction, with the option of continuing the stroke if conditions proved it to be necessary. The net result is to greatly reduce any tendency to "hunt."

Further developments along this line resulted in modification of the controlling mechanism and the perfection of the Trend Analyzing Controller. This controller acts like a skilled manual control operator and takes changing conditions into account. Where an appreciable lag is involved, this instrument waits until the effect of the change is felt before making another correction, thus moving the valve at a rate proportional to the rate of temperature change.

The rapid strides in electric pyrometry have probably been due to the flexibility, convenience and accuracy of this method of temperature measurement. Ease of changing the range of an instrument has been given particular attention in modern recorders. In research and development work, as well as in a tremendous variety of plant operations, there is some form of electric pyrometer adaptable to the measurement of temperature.

Pacific Meter and Reliance Regulator Entertain Metermen

Pacific Meter Works, Los Angeles, with the assistance of the Reliance Regulator Corp. acted as hosts to 34 meter and regulator engineers, service and repairmen at a dinner and smoker early in October. Representatives of the Southern Division, San Joaquin Light and Power Corp., Los Angeles Gas and Electric Corp., Southern Counties Gas Co., Southern California Gas Co. and the Long Beach Municipal Gas Department attended.

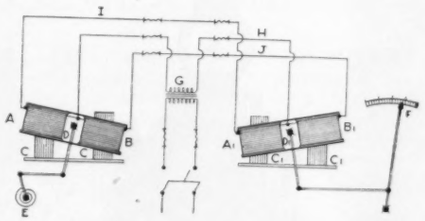
K. C. Tomlinson of Pacific Meter Works and J. J. Delaney of Reliance Regulator Corp. conducted the guests on a tour of inspection of the two plants and gave instructive talks on the proper maintenance of meters and regulators. This was followed by the dinner and smoker.

Bristol Remote Control

BRISTOL'S Long Distance Electrical Transmitting and Recording System provides telemetering by remote or centralized control, and may be used on pressure, temperature, liquid level, and for mechanical operation.

It operates on induction balance principle, using three wires between the transmitter and the receiver.

Each instrument has two coils that are



mechanically balanced, and supported on knife edges. These coils swing in a vertical plane over laminated iron cores. The position of the transmitter coils is determined by the temperature measuring element, while the position of the receiver coils is determined electrically by the position of the transmitter coils.

As this system operates on alternating current, it will be seen that increasing the amount of iron in a coil will increase its impedance (A. C. resistance), while decreasing the amount of iron will lower the impedance.

Referring to the accompanying illustration, coil A of the transmitter is connected in series with coil A1 of the receiver; while coil B of the transmitter is in series with coil B1 of the receiver. There are two distinct circuits supplied from one transformer G, line H being common to both. The position of the transmitter coils A and B is determined by the actuating element E. The receiver coils will assume a position so that the circuits through A, A1 and B, B1 will be balanced. Now, if the position of the transmitter coils is changed—for example, if the impedance of coil B is increased while the impedance of Coil A decreased—more current will flow through A and A1, and less through B and B1. The result is that the receiver coil A1 is pulled down over the core, while coil B1 moves up until the impedance of both circuits is the same, the current the same, and the transmitter and receiver coils are electrically balanced.

The receiver coils are held in a position determined by the transmitter coils, and the pointer P will indicate the correct values as measured by the transmitter element.

Actuating element E consists of Bristol measuring systems as used in the company's pressure, temperature, liquid level and mechanical operation recorders. Transmitters housing coils A and B are supplied with indicating scales or non-indicating cases. Receivers may be indicating or recording. Recording receivers are furnished in several models, including strip charts.

Several receivers can be operated from one transmitter, if necessary.

Receiver models are available for operating adjustable electrical contacts for sounding signals or operating signal lamps.

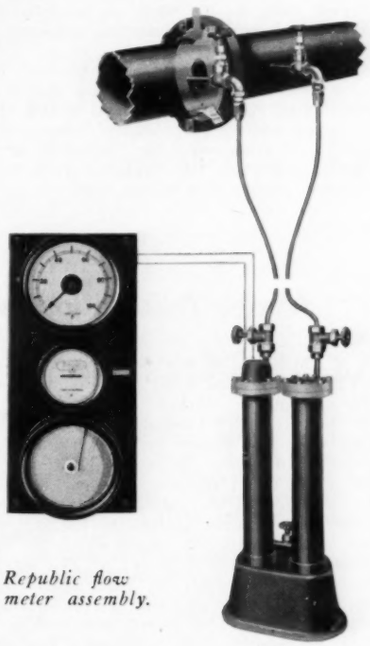
The three connecting wires are supplied by user; and any kind or size may be used when properly insulated. Resistance should not exceed 78 ohms. Electrical supply circuit is 11 volts, 60 cycles. The system is designed for the following purposes:

Use in checking remote pressures in low and high pressure lines; at governors; in regulator pits and stations, etc.; for steam heating mains; canal, river and reservoir and stand pipe water levels; position of gates, valves, governors; temperatures of gas in mains; atmospheric temperatures, etc.

Republic Flow Meters

REPUBLIC meters manufactured by Republic Flow Meters Co., consist of three parts, the orifice in the pipe, the meter body, and the instrument panel. For measurement of pressures, the construction is the same, but the orifice is omitted.

The distance between the meter body and the panel is limited only by the resistance of the conductors. For the measurement of flow, a panel such as shown in the cut is customary, and the distance between the meter body located at the pipe line, and the panel containing the reading instruments is limited to a resistance of 17 ohms in the complete circuit.



Republic flow meter assembly.

The meter operates on any differential from 2 inches of water maximum to 300 inches of water maximum, and any static pressure from atmospheric up to 5000 pounds per square inch. The above applies to standard equipment, but the range can be increased through the use of special equipment.

In the measurement of pressures, the allowable line resistance is somewhat greater, being 35 ohms in the case of standard instruments, and 70 ohms in the case of those that are specially designed.

The current requirements for metering or pressure measurements are single phase, alternating current, 110 volts or 220 volts. Voltage or frequency variation has no effect on the accuracy of the instruments.

Liquid levels may be recorded or indicated, and the requirements are the same as for gas pressures.

Pressures from a total range of 2 inches of water up to 120 feet of water can be measured either directly or with a suppressed zero.

Contacts for alarm or relay operation can be installed at any desired point, and the control may be of the single point type or the three point type.

A DEFINITE trend toward wider application of telemetering and remote control in the gas industry has been evident for some time. In distribution, transmission and plant operations there are many opportunities for use of the systems and equipment now becoming available. The remote control, indication and recording of pressure, flow, temperature, liquid level, and other important operating conditions, it may safely be predicated, will shortly bring material changes into routine practice and will introduce efficiencies and economics hitherto unthought of.

On a preceding page a paper by Ralph L. Cook of the Southern California Gas Co. discusses definite applications for telemetering and remote control. Manufacturers of gas measurement and control equipment also submit descriptions of their apparatus for this field, on this and the following page.—Editor.

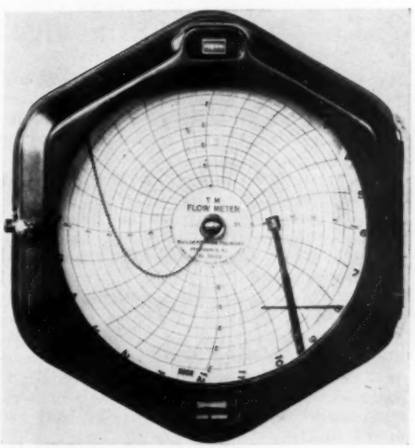
Meter bodies are moisture and dust-proof, and are not subject to damage through freezing in the case of gas.

An indication and record of the CO_2 content is made by direct analysis, the analysis body being located close to the point where the sample is obtained. The record can be made mechanically at the analysis body or transmitted electrically, the same as in the case of the flow meter.

The Chronoflo Meter

BUILDERS Iron Foundry announces the production of the new Chronoflo Meter, designed to record electrically the measurement of steam, air, gas and liquids by remote control.

Essentially the Chronoflo instrument consists of a Telechron driven contact device



controlled by the height of the mercury column in the mercury unit (i.e. the rate of flow through the orifice or venturi tube) and a Telechron driven register-recorder which

is in operation during the time that the mercury switch is "on" in the mercury unit. The mercury switch is sensitive to minute changes in mercury level; the power relay transmits the contact engaging the Telechron drive with the integrating and recording movement through the electro-magnetic clutch.

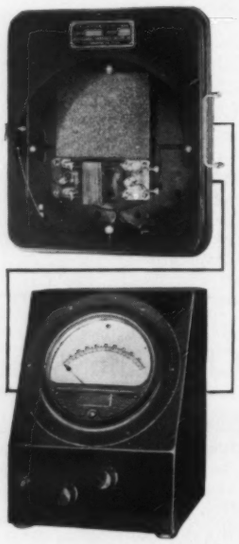
The manufacturer states that there are practically no limits to the distance allowable between the pipe line and the register-recorder and for exceptionally long distances the standard public telephone system circuit can be used.

Other features include the hexagonally shaped case which allows the use of a long side hinge. All working parts are mounted on a single plate which can be swung out from the case for inspection.

The Telemco System

THE Telemco System, an instrument for remote metering, has been developed by the Pittsburgh Equitable Meter Co. for measurement from a distant location over leased wires to a central point.

The system was designed for such applications as indicating gas pressures at outlying points of distribution systems, isolated



The Telemco system: above, transmitter, below, receiver, with 2-wire connection between.

gas wells, reduction points, pipe line enetrances to large industrial consumers, pressures along long-distance pipe lines, and for the indication of heights of holders, position of valves, etc.

The transmitter consists of a variable inductance which may be actuated by a mechanical movement, such as can be obtained from a sylphon bellows, or a manometer type mercury float. This movement creates an electrical change in the transmitter, which in turn is sent over the connecting wires to the receiver.

The indication from the transmitter, upon reaching the receiver, is amplified by means of a vacuum tube and is registered on a milliameter. Any movement which occurs at the transmitter will, simultaneously, be indicated at the receiver.

The transmitter and receiver are electrically connected between their respective locations by means of two wires, or, for short distances, one wire and ground return. This two-wire circuit is believed to have an advantage, since telephone lines are leased in pairs, and in systems where three wires are necessary an additional set, a total of four wires, only three of which are used, is required, thus doubling cost of leasing the wires.

New Fisher Series

THE Fisher Series 4000 and 4200, the latter of which is here illustrated, is an auxiliary type of regulator utilizing the Wizard pilot, which can be mounted on a panel board remotely from the main valve, or as shown in the accompanying cut, or as a part of the top work of the main valve. It can be used either as a pressure relief valve or pressure reducing valve.

The Wizard pilot has no springs, no stuffing box, nor diaphragm. It is fully throttling and can be converted for handling different pressure ranges at a low cost. The pilot can be converted from a pressure relief valve to a pressure reducing valve or vice-versa. It is simple in construction and adjustment and can be furnished with either a panel-board type of pilot or pilot mounted integral with the top work of the main diaphragm. A small amount of auxiliary air is necessary for operation.

The main valve can be furnished with either semi-steel or steel bodies and either bevel-seated Konovalv or bevel-seated regular inner valve, with either bronze, "Ni-resist," or stainless steel trimming, or on special order can be furnished with fully-balanced composition valve disc.

This unit is used primarily for control at town border stations or reduction stations on gas lines handling large volumes and reducing high initial pressures down to intermediate or loop-line pressures. The unit may be used also as a gate regulator to industrial plants, reducing the high line

pressure down to 25 pounds, the usual distribution pressure in the industrial plant.

Adaptation of the Bourdon tube which is operated directly in the pilot from the operating pressure and which in turn controls the auxiliary pressure to the main diaphragm, is a feature.

Meter Association Meets at Whittier, Oct. 27

MEMBERS of the Southern California Meter Association met in their regular monthly session on October 27, at the English Tavern, Whittier, Calif. Following the dinner the first of two program features was presented by Gene McIntyre of the Ducommun Corp. Mr. McIntyre exhibited several films showing application of Victualic Joints to unusual pipe line construction. A paper by J. B. MacMahon, chief sales engineer of The Foxboro Co. was read by D. M. Hill, district manager of The Foxboro Co.'s Los Angeles branch office. The paper was entitled "A New Profession: The Instrument Engineer," and will appear in an early issue of *Western Gas*.

Results of the monthly golf tournament held by S. C. M. A. on September 25 were announced by A. E. DeBurn, the winner being E. Lorenz of the Southern California Gas Co.

On November 13 S.C.M.A. tennis players will get out their racquets for the first Association play—to take place on the Chanslor-Canfield Midway Oil Co. courts at Torrance, Calif. This will be the beginning of a doubles tournament, and a good number of players are expected to turn out.

S. C. M. A. Committees Named for 1932-1933

BELOW is published a list of Southern California Meter Association Committees for the current year, 1932-1933, as announced by President L. P. W. DesBrisay.

Program

M. J. Cereghino, Chairman, L. A. Gas & Electric Corp.
B. G. Williams, Southern Calif. Gas Co.
R. F. Angell, Union Oil Co. of Calif.
T. K. M. Smith, Industrial Fuel Supply Co.

Membership

F. A. Miller, Chairman, Southern Counties Gas Co.
F. E. Webster, Signal Oil & Gas Co.
F. Stevens, Gilmore Gasoline Co.
L. Bonner, Standard Gasoline Co.
T. G. McAlister, Texas Company
L. J. Patrosso, Norwalk-Bankline Co.
M. R. Miller, Southern Fuel Company
W. J. Kennedy, L. A. Gas & Electric Corp.
C. Gruendler, Southern Calif. Gas Co.
A. G. Lindell, Industrial Fuel Supply Co.
A. E. Madden, Southern Counties Gas Co.
C. G. Brown, Shell Oil Co.

Entertainment

J. A. Smith, Chairman, Texas Company
K. C. Tomlinson, Pacific Meter Works
J. J. Delaney, Reliance Manufacturing Co.
W. H. Davis, Pittsburgh Equitable Meter Co.
D. M. Hill, Foxboro Company
H. C. Dahl, Midwest Piping & Supply Co.
T. M. Martin, Byron Jackson Co.
B. O. Bushnell, Neilan Company
A. E. DeBurn, Southwest Welding and Manufacturing Company.

Publications

F. W. Curtis, Chairman, Shell Oil Company
Geo. H. Finley, Western Gas
F. H. Swayne, Southern Counties Gas Co.
M. K. McIlvaine, Chanslor-Canfield Midway Oil Co.

By-Laws

W. W. Warneke, Chairman, Chanslor-Canfield Midway Oil Co.
L. Bonner, Standard Gasoline Co.

R. L. Cook, Southern Calif. Gas Co.
W. Shellshear, Gilmore Gasoline Co.

Standards

E. Valby, Chairman, Richfield Oil Co.
W. L. Cowan, Union Oil Co. of Calif.
R. L. Cook, Southern California Gas Co.
J. A. Swindle, General Petroleum Corp.
E. Wilde, Southern Counties Gas Co.
W. J. Kennedy, L. A. Gas & Electric Corp.
D. G. Dawkins, General Petroleum Corp.
L. E. Dolton, Gilmore Gasoline Co.

Arrangements Made for S. C. M. A. Exhibit

IN LINE with its annual custom Southern California Meter Association is arranging to hold an Exhibitor's Meeting, the date for which is December 1. M. J. Cereghino, chairman of the S.C.M.A. program committee, is directing arrangements for the exhibit, in cooperation with President L. P. W. DesBrisay.

The exhibit will be held at the Los Angeles Gas and Electric Corp. auditorium, 810 South Flower Street, Los Angeles, Calif. Upwards of 30 individual displays are expected to be included, covering a wide range of equipment for measurement and control. Showings of newly developed equipment are already arranged for pressure controllers, anti-ambient thermometers, gravity balances, orifice fittings and gauges. Many pressure gauges, meters, regulators, and orifice fittings which have been on the market for some time will also be shown in their latest models.

A dinner meeting, served at the Los Angeles Gas and Electric Corp. cafeteria by the S.C.M.A., will take place at 7 o'clock. There will be no paper for the evening, the exhibit being open from 4 o'clock in the afternoon until 10:00 at night, with an hour's intermission for the dinner.

Meter Short Course Scheduled for Dec. 6-9 at Ames, Iowa

THE Twelfth Annual Gas Meter Short Course and Conference, under the joint auspices of the Mid-West Gas Association and Iowa State College, Ames, Iowa, will be held at Ames, December 6, 7, 8 and 9. Program details are being worked out by the Short Course Committee under Chairman Robert L. Klar, and will feature in large part the problems to be met by the advent of natural gas in the Middle West.

Meter shop practice in other years a feature of the course, will be omitted this year, with the additional time given to the general program which will feature such subjects as change-over from manufactured to natural gas; fogging of gas, its purposes and results; househeating and its problems; and regulators. There will also be an exhibit of regulators, demand meters, and other distribution equipment. Arrangements for the exhibit are being handled from the Iowa State College, Engineering Extension Service by L. W. Mahone, assistant professor.

Montana Power Building New Gasoline Absorption Plant

Montana Power Co., Butte, Mont., is constructing a gasoline absorption plant 4 miles east of Cut Bank to recover gasoline from gas piped from the Cut Bank field to Butte, Helena, and other Montana cities through the company's 20-inch carrier. Stearns-Rogers Co., Denver, Colo., has the contract.

New Large-Capacity Positive Displacement Meter

A NEW large capacity positive displacement meter has been developed and is being manufactured by the Sprague Meter Co. at Bridgeport, Conn. The meter weighs approximately one ton, takes up 4 x 3 feet of floor space and is designated as No. 20. It is equipped with 6-inch standard pipe flanges and has a capacity of 15,000 cubic feet at a ½-inch differential, 21,000 cubic feet at a 1-inch differential, and 32,000 cubic feet at a 2-inch differential, and registers to 100,000,000 cubic feet.

Accuracy of measurement has been attained with flows ranging from that required for a pilot light of a domestic refrigerator to that of industrial demands of over 30,000 cubic feet per hour. This meter is sturdily constructed, handling working pressures up to 75 pounds. It has a minimum of moving parts. All bearings are self lubricated. Such materials as duraluminum, graphite-bronze, stainless steel and other non-rusting and non-corrosive materials are used in the fabrication of Sprague No. 20.

Among its many applications are for field meters for small towns which purchase their gas from central sources and all phases of industrial demands.

Natural Gas Customers Gain in 1931

(Continued from Page 17)

completed against 21,240 in 1930—with the result that the quantity of natural gas used for such purposes declined 21 per cent in 1931.

The consumption of natural gas as fuel at petroleum refineries has declined steadily in recent years as many refiners have found it cheaper to utilize the fuels made at their plants—fuel oil, refinery gas and coke—rather than to buy natural gas from outside companies. In 1931 the consumption of natural gas as refinery fuel totaled 75,548,000,000 cubic feet, a decline of 24 per cent from the 1930 total.

According to the United States Geological Survey, the consumption of natural gas at electric public-utility power plants in 1931 amounted to 138,343,000,000 cubic feet, an increase of 15 per cent over 1930. This class of consumption has become an important factor in the industry as its proportion of the total consumption has risen from 3.6 per cent in 1921 to 8.2 per cent in 1931.

The consumption of natural gas for general industrial purposes exclusive of consumption at carbon-black plants, refineries, and electric public-utility power plants totaled 322,700,000,000 cubic feet in 1931, a decline of 9 per cent from 1930.

Texas continues to outrank the other States both in the production and consumption of natural gas. Ohio ranked first in the quantity used for domestic and commercial consumption; Oklahoma, in field use; Texas, in the utilization at carbon-black plants and at refineries; California in use at electric public-utility power plants. California displaced Oklahoma as the second-ranking natural gas producing State in 1931.

The interstate movement of natural gas declined in 1931, the total of 332,538,000,000 cubic feet comparing with 380,601,000,000 cubic feet transported across State lines in 1930. Actually, the decline in 1931 was less than is indicated, as certain duplications were eliminated in 1931 for the first time. The two largest interstate movements, those from West Virginia as the leading State in inter-West Virginia to Ohio, and from Louisiana to Texas, both declined nearly 10,000,000,000 cubic feet from 1930. Louisiana succeeded state shipments. The most important new interstate movements were from the Panhandle (Texas) and Hugoton (Kansas) fields to Nebraska-Iowa-Minnesota and to Missouri-Illinois-Indiana.

Oil Equipment & Engineering Exposition April 17 to 23, 1933

Arrangements have been completed to hold the Oil Equipment & Engineering Exposition, to be held at Dallas, Texas, April 17 to 23, 1933, at the Texas State Fair Grounds, according to Clyde V. Wallis, manager of the Industrial Department of the Dallas Chamber of Commerce. The Exposition will be managed by E. G. Lenzner, who operated the Oil Equipment & Engineering Exposition in Los Angeles, Calif.

The exhibits will consist of new developments of equipment for drilling, production, refining, pipe line and gas equipment.

The main building in which the exhibits will be displayed is known as the Machinery Building, a structural steel and brick building 500 feet long and 185 feet wide, with 92,500 square feet of floor space. This modern building has all facilities, such as power, gas, water, compressed air, and is suited for exhibits of machinery and equipment. Ample outdoor space is provided for outdoor exhibits and parking. Several other buildings are available for technical meetings and other purposes.

A number of manufacturers have already made space reservations for the Exposition, including manufacturers from the Pacific Coast and the east.

Customer-Salesmen for Kansas Utility

(Continued from Page 18)

provided meter is installed prior to January 1, 1933.

In order to receive credit on contest for special prizes, meter applications and deposits must be made on or before November 15, 1932.

6. *Applications:*

All applications must be taken on standard forms which will be furnished by The Kansas Power and Light Co., Natural Gas Division.

7. *Reports:*

Each contestant must make a report of his calls each day, to the local gas office, on forms to be furnished by The Kansas Power and Light Co., Natural Gas Division.

8. *Representation:*

All contestants must follow the instructions given by the parties in charge of the contest, and shall make only those representations with reference to the company, its business and service as are given to the contestants by a proper instructor.

The Company reserves the right to dismiss any contestant who is guilty of making any misrepresentation or practicising any fraud. Upon such dismissal, if any, the Company will pay such contestant commissions he has rightfully earned.

In the event there is any question with reference to the accuracy of any misrepresentation, misconduct or fraud, the facts shall be submitted to the judges hereinafter referred to for their decision.

9 *Prospective New Customers*

Each contestant will be furnished a list of prospective new customers in Seneca. Applications, however, will not be limited to those on the list.

10. *Free Service Line*

A service line will be installed free of charge from the company's main to the inside of basement or foundation wall provided the premises are within 150 feet of company's main and the customer agrees to use gas for one year.

11. *Special Prizes*

First Prize. The contestant securing the greatest number of new customers will receive in addition to the $2 commission for all customers secured by him, a special prize of $1 for each new customer secured by all other contestants during the contest.

Second Prize. The contestant securing the second greatest number of new customers will receive a special prize of 75 cents for each new customer secured by all other contestants during the contest.

Third Prize. The contestant securing the third greatest number of new customers will receive 50 cents for each new customer secured by all other contestants during the contest.

The Attitude of Utility Commissions

(Continued from Page 19)

ulatory bodies to declare economic emergencies when these did not exist in fact or, at least, to prolong their specified term long after they had actually passed. Commissioners who ran counter to demagogic insistence might speedily find themselves replaced by persons who would prove more compliant. The introduction of such a principle as that which the Wisconsin Commission favors would undermine that confidence of the investing public in the securities of public service companies which has been obtained only after years of effort to reach a stable, reasonable and lawful means of determining what rates may fairly be charged for services."

In the State of Kansas we find the chief executive of the State ordering the Attorney General to institute receivership and ouster proceedings against a group of natural gas utility companies, whose announced purpose was to do nothing more than assert their constitutional rights by challenging the validity of a commission order in the courts.

My opinion is entitled to no great weight, but my observations lead me to believe that the unfair attitude of certain of the state commissions toward the utilities is induced in part by a weak and vacillating attitude on the part of certain of the utilities. Many of the utilities, in order to avert political attacks, have made unwarranted rate concessions and solaced themselves with the thought that their public relations would thereby be improved. Such an attitude on the part of one utility makes the public believe that there must be something wrong about those utilities who stand their ground and refuse to yield to the political challenge. Now, do not mistake what I say; if the public upon the facts is entitled to rate concessions from any utility, those rate concessions should be made and made voluntarily; but the public utility executive who makes unwarranted rate concessions to appease prejudice generated by the clamor of the politicians, is disloyal to his security holders and ultimately will be shown to have contributed to the breakdown of his public utility service.

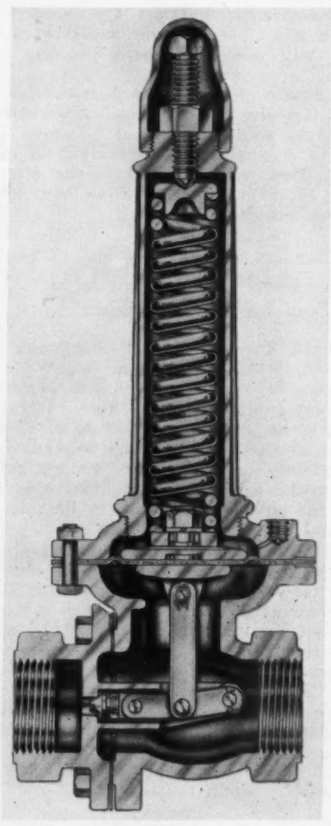
The utility commissions were created for regulatory purposes and many of them have fulfilled this function in an admirable way. They have made for a stability in the industry which has given assurance to the public, the public utility investors, and the public utility operators of fair and equitable treatment. But on the other hand certain of the commissions have abandoned the idea of regulation as such, have launched on a campaign of management of the utilities and, in many cases, have embarked upon a program of persecution of the utilities. The public, through the radical press, hears the commission's biased view, and then when the commission's decision, defiant of the law of the land is upset by the courts, we hear the complaint that the public is powerless and that commission regulation is a failure. And it certainly will be a failure whenever and to the extent that the commissions ignore their statutory and constitutional functions and substitute prejudice for the law and the facts.

The men who founded the natural gas business had plenty of courage and the men who have developed it to its present stage have exhibited the same characteristic. In discharging our responsibility for the future conduct of the natural gas business of these United States, it will be incumbent upon us to fairly and fearlessly present our matters before regulatory commissions having jurisdiction, and if these decisions are prejudicial, unwarranted and unjust, it will then be our first duty to contest to the utmost such orders as will inevitably make for a confiscation of property and a destruction of the valuable public service rendered by the industry.

Reynolds Half-Ton Regulator

THE Reynolds half-ton regulator is shown in the accompanying illustration. It is designed for handling pressures up to 1,000 pounds, reducing same to pounds.

A feature of this regulator is the bronze casting on the inlet side which assures that there is no high pressure or inlet gas against the cast iron body. The inlet connection, complete with pipe connection and fixed fulcrum, is a one-piece bronze casting. This arrangement tends to eliminate outside connections and the possibility of leaks where



the toggle pin goes through. With the toggle a part of the bronze casting, pressure on the toggle will not push it away from the cast iron body to which it is bolted.

The valve on the new regulator is designed so that it can be adjusted to and from the face of the orifice for changing angle of toggle when desired. The Half-Ton regulator is manufactured by the Reynolds Gas Regulator Co., Anderson. Ind.

Keith Clevenger Resigns as Director of Publicity and Advertising, A. G. A

KEITH Clevenger, since June, 1929, director of publicity and advertising for the American Gas Association, has resigned that post to take up other work. He went with the A. G. A. from a position as director of information service for the Empire Companies at Bartlesville, Okla.

Keith Clevenger

Mr. Clevenger was born in Yates Center, Kan., on January 14, 1887. He was graduated with a degree of L.L.B. from Kansas University, class of 1909, and from 1910 until 1919, was editor and owner of the Osawatomie Graphic, Osawatomie, Kan. In January, 1919 he became managing editor of the Salina Daily Union, Salina, Kan. He was later made advertising manager of the State National Farmers' Educational and Cooperative Union at Salina. In this capacity he was executive assistant to the president of the National organization. In 1920 he became executive secretary of the Kansas State Chamber of Commerce.

In 1921 Mr. Clevenger organized and directed the public relations department of the United Light and Power, United Telephone and associated companies, with headquarters at Abilene, Kansas. In June, 1923, he became director of public relations for the Cities Service Gas Co., Bartlesville, serving in that capacity until September, 1927, when he became director of information service for Empire. He remained in that position until June, 1929, when he went with the American Gas Association.

Hoffman Gas & Electric Heater Co. Is Newly Organized

Purchase of the Hoffman Heater Co. by the newly organized Hoffman Gas & Electric Heater Co., Louisville, Ky., with plans for the doubling of payroll and production, was announced November 2.

Announcement of the deal was made by Walker H. Bowman, Jr., president of the new company and president of the National Forge Co. of Louisville.

Directors of the Hoffman Gas & Electric Heater Co., in addition to Mr. Bowman, are: R. I. Ingalls, Birmingham, Ala., a director of the Girdler Corp., of Louisville; W. F. Clark, Philadelphia, inventor of the electric heater; F. B. Ayres, secretary and manager of the Louisville Industrial Foundation, and Robert F. Vaughan, president of the Louisville Board of Trade.

The new company will take over all assets and business of the old company, including 25 branches in the principal cities of the country, according to Mr. Bowman.

Mr. Clark will move to Louisville from Philadelphia and with Mr. Bowman will assume management of the company with offices at 1701-15 Dixie Highway.

Commission Considering Interim Rates for So. Calif. Gas Co.

Following hearings held late in October the California Railroad Commission has under advisement the institution of an interim rate reduction on the Southern California Gas Co. system, pending conclusions of the general proceedings now under way on the compay's rates.

The Need for Promotional Selling

(Continued from Page 11)

price field to any extent, it acquires much of the volume which the established retailer or merchandiser could most readily sell himself; and ordinarily the utility, if it is to acquire its optimum load, needs to have the selling capacity of all possible retailers of gas appliances. Also, it is well to realize that public acceptance is usually given to the type of equipment sold by the utility, and to a large extent, the prices which the utility quotes for an appliance come to be accepted by the public as the price at which a good appliance of that kind should be obtainable. If the utility sells too far down the price scale the public acceptance lowers to that point, and merchandisers find it unprofitable to sell at any other prices. I believe it can be shown conclusively that dealers can and will sell better appliances in the territory of the utility which places its effort on equipment of quality only, than they can or will in a similar territory of a utility which attempts to cover the lower priced field. This may be accounted for in part by the fact that the utility price tends to become the standard of public acceptance; in part, because merchandisers themselves tend to accept the same standard; and also to the not inconsiderable fear that many retailers have that they cannot compete with the utility, and therefore must sell equipment which is at least slightly lower in price. The utility should accept the task of promotional selling of those appliances which are of unquestioned quality.

Thorough and logical selling programs can result only from adequate planning, and planning requires information. Much of the criticism of utility appliance selling results from unplanned, and sketchy selling, which often accomplishes little, if any, more than the retailer himself might be in position to do. Accurate information showing current market saturation by sections is just as important for load development as is accurate survey information for determining the possibility of serving new areas. Without such information any program is a guess; even with it too much uncertainty will remain. However, with proper current information available, it is possible to plan advertising for coverage with a minimum of waste by directing the effort where it is most needed. If the information is properly obtained it should be possible to measure market expectancy of a given section with reasonable certainty, and to plan the total promotional expenditures accordingly. The very fact that the results obtained by promotional expenditures are not readily measurable within a short time, should induce us to apply all of the best information which we can obtain to the initial planning. The opposite appears to be the rule, however, for promotional expenditures are ordinarily made with less investigation than any other expenditure of comparable size.

Aims of Market Analysis

Market analysis on a gas system should indicate poor sections which may require especial attention, either by increasing the normal program or perhaps by introducing selling programs designed particularly for those sections. It is clearly the responsibility of the utility to discover the sections which require special attention, and to encourage the activity of retailers in that area. However, it will usually be found that the retailer and manufacturer cannot afford to spend the money to open that market, and in my experience, they will be the first to say that they must depend upon the utility. It is a healthy policy for any utility to supply retailers and manufacturers with information concerning the low saturation areas, first, that they may be able to do their part intelligently, and, second, that they may realize the extent of the potential market which is open to them, and, last, but by no means least, that they may fully realize the necessity for promotional selling by the utility. For example, the water heater distributing agencies of one city on the Pacific Coast felt that the metropolitan market for automatic water heaters was substantially saturated. Led to believe this because their volume of business was replacing worn out automatic water heaters, they considered that the utility was unwarranted in selling in that section because its water heater business must also be principally replacing automatics. The local utility met with them and brought out the point that the metropolitan market was not reasonably saturated, as indicated by survey information showing some areas of low saturation. It further brought out the fact that only one-third of its sales were replacements of automatic water heaters. The water heater agencies readily acknowledged that they could not afford to direct special emphasis on those areas without some assistance, withdrew their objections to utility activity, and took what steps they could to increase their coverage there. In other instances also retailers and even associations have withdrawn their objections to the utility's selling efforts when presented with such data. Manufacturers, too, can better judge where they should establish additional dealer outlets, or can be induced to increase their efforts, when they have definite information of this nature.

One factor which must obviously be established before the present saturation of the market can be determined is the potential buying power capacity for particular appliances in a given section. Once this has been determined it is then obviously essential to a complete analysis that you know what gas sales volume any appliance will produce on your own system, with your rates, under your climatic conditions, under the particular economic circumstances of each section, and with the use habits of the locality. If there can be said to be one type of information which the gas industry needs most and particularly the natural gas industry, it is knowledge of the actual load producing effect of appliances. Doubtless one reason that this information is so generally lacking is that it must be largely produced by the individual company for its own use, and little of it is applicable to another company. In fact, a difference in rate often has a marked effect upon the use of some types of equipment so that different sections within one company must be treated separately. Nevertheless, the information is essential to a well planned promotional program. When one knows the degree of saturation of various appliances on his system, and then knows what added gas sales may be expected by increasing that saturation, he has the opportunity of setting up plans for spending wisely. Without such knowledge his estimates must be guesses.

Those who have not acquired information of this character for themselves will be astonished at how little they know about their own business. The extent to which a range may be used for heating water or for house heating may be compared in high and low

rate districts, and this and other data may be used in conjunction with promotional programs to develop promotional rates, recommended repeatedly by rate committees of this association as well as by many regulatory commissions. One Pacific Coast utility discovered the surprising fact that, in one section, on the average, it realized a slightly greater increased consumption from changing a non-automatic water heater to an automatic than it did by converting a customer's heating from some other fuel to gas. It had the further information that in the same section only 26 per cent of the customers were not doing their major heating with gas, whereas nearly 10 per cent had no gas water heaters of any kind, and 57 per cent had non-automatic water heaters. Since nearly two-thirds of the customers were not equipped with automatic water heaters, and only one-fourth were not equipped for heating with gas, and on the average, the increment of gas sales for each change would be the same, and since water heaters could be sold substantially throughout the year while heating was seasonal, the company changed its original plan and devoted its promotional efforts and established a promotional optional rate to acquire added automatic water heating instead of spending its principal effort upon heating, as intended.

In this instance the utility has been successful in interesting some retailers in acquiring additional volume of business by field selling. Particularly in the larger cities, field selling is receiving increasing acceptance, although the extent of participation on the part of many types of retail businesses is grossly inadequate to gain for them the business they could acquire.

Efficient, convenient, economical modern gas appliances in our customers' homes, properly installed and adjusted, are essential to the continued existence of the gas industry. Our customers will not be satisfied for long with less than this standard. If we do not, through our promotional activities, cause gas equipment to be placed in their homes which satisfies these requirements they will turn to other sources of energy.

Football Fever Brings Campaign Sales Results

(Continued from Page 15)

sales of appliances, each appliance sale being worth a pre-determined number of "yards."

More yardage per sale was allowed, relatively, for September and October sales than for November sales, to encourage special effort early in the Fall season.

A special system of yardage credits and penalties was developed for scoring safety and accounting departments standings, to which was added the yards earned by the sales department to make total division scores.

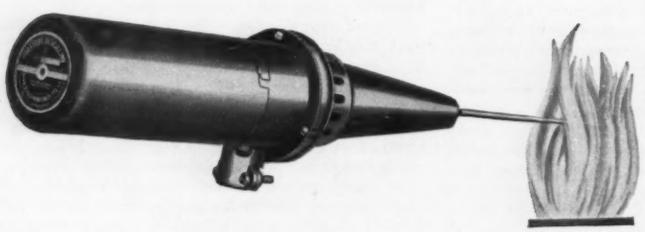
At the end of the campaign "Conference Champions" and "Company Champions" will be announced and the "All-Company Eleven" made up of 11 high salesmen will be picked, each of whom will receive a moleskin zipper jacket or sweater.

Contest officials are W. L. Hayes, F. R. Gamble and C. W. Smith, of the company's executive staff, alternating in the capacities of referee, umpire and headlinesman. Each serving a month in the above official posts, this official board determines all campaign disputes, will interpret rules, and render decision on final winners.

A special division award, to go to the division making an outstanding showing in the campaign, a silver loving cup known as the Heskett Trophy, was offered. This trophy will remain with the winning division for one year and then be contested for again. The winning division name will be engraved on the trophy. A silver plaque special award was also set up for accounting departments, and a safety award was offered for the division making the best safety showing in the contest. Monthly awards also were given, in the form of a 36-inch pennant, to the division achieving highest ratings in all departments.

Customer sales inducements for the gas sales branch of the campaign consisted chiefly of attractive prices on load-building gas appliances — conversion burners, circulating heaters and floor furnaces.

Word received from Mr. Schwarz at the expiration of the first monthly campaign, reports sales averaging between $2 and $3 per domestic meter, for that period, with the enthusiastic participation of every employee.



The "Protectoglow" flame safety device

Minneapolis-Honeywell Regulator Co.'s "Protectoglow"

THE Protectoglow, manufactured by Minneapolis-Honeywell Regulator Co., Minneapolis, Minn. is a flame safety device, operating from the electrical conductivity of the flame. It acts in response to the presence and absence of flame, and is designed to protect against the escape of unburned combustibles into the combustion chamber. The Protectoglow is adaptable to both small and large installations, and may be employed in remote control installations, indicating systems, and automatic change-over combinations.

The manufacturer calls attention to one application in the solving of a control problem in connection with a district steam heating plant, using natural gas. Powdered coal burners are installed as auxiliaries. Normal operation is with the gas burners. In the event the gas pressure falls below a definite minimum, or in case the gas available is insufficient to keep the required steam pressure on the boiler, the powdered coal burners are automatically started. Ignition is provided by the gas flame. After combustion of the powdered coal is definitely established, the gas burners are turned off automatically and locked out of operation. At the moment of changeover, alarms are actuated, and an indicating control panel registers the progress of the automatic control sequence. The Protectoglow forms the basis of the control system, and prevents entry of any fuel into the combustion chambers unless dependable ignition is assured. The Protectoglow also acts to cut off all fuel flow in the event of the flame failing or pulling away from the burner. Other innovations are used such as electrical proportioning control of the heat output of all burners, and emergency manual control of the installation from the superintendent's office.

Pension and Benefit Plan for So. California Utilities

A PLAN covering retirement income, death benefits, and disability benefits for employees became effective September 1, according to the announcement made by officials of the Los Angeles Gas and Electric Corp., Southern California Gas Co., Southern Counties Gas Co., and Santa Maria Gas Co., all affiliated with Pacific Lighting Corp.

The plan is the result of over two years of study of benefit systems in more than 50 large industries of the country, together with the advice of insurance and actuarial experts. It replaces the pension and benefit plans which have been carried on separately for a number of years, and affects 6,200 employees of the companies participating.

The pension feature provides for the retirement of women at age 60, and men at age 65. It also calls for participation in the cost by employees to the extent of 3 per cent of their monthly salaries. This is supplemented by a larger contribution by the companies. Employee deposits in the pension fund are returnable in full, with accrued compound interest, in event of the employee leaving the service before retirement.

The death benefit and disability benefit features of the plan are provided for employees entirely at the expense of the companies.

The four utility companies concerned serve approximately one million customers throughout Southern California from Fresno and San Luis Obispo counties on the north to San Diego and Imperial counties on the south, with natural gas drawn from numerous fields in the Los Angeles Basin, Kern and Ventura counties, and Kettleman Hills. Their pipe lines and distributing mains form a network 11,500 miles in length. The original unit of the system was established in Los Angeles in 1867.

Moore Corp. Celebrates Its Diamond Anniversary

The Moore Corp., Joliet, Ill., is celebrating its 75th anniversary as manufacturer of cooking and heating appliances. The company was founded by Alexander K. Moore and his brother, Wm. N. Moore, at Joliet in 1857. The business is now in the hands of Lewis Moore, son of Alexander K. Moore, as president, and Lewis Moore, Jr., grandson of the founder, as vice-president.

C. B. Wilson

W. J. McIntyre

C. B. Wilson at Little Rock; W. J. McIntyre is Promoted

C. B. WILSON recently was transferred from Shreveport, La., taking the place of S. A. Lipscombe, new business manager of the Little Rock Gas & Fuel Co. Mr. Wilson's position as new business manager of Southern Cities Distributing Co. has been taken by W. J. McIntyre.

Mr. Lipscombe has left the employ of the organization to become a member of the executive staff of the Southern Securities Co. of Little Rock.

Mr. Wilson was graduated from Georgia Tech in 1921. After leaving school he was employed by Southern Railway System in Atlanta, Ga., for a period of two years. The next two years were spent in the employ of Western Electric Co. in Atlanta. In 1924 he entered the Henry L. Doherty Cadet School at Bartlesville, Okla., in the various departments of the company. After a year as junior engineer he was sent to the Doherty House Heating School at Toledo, Ohio, and then was appointed engineer with the Parsons Gas Co., Parsons, Kan. He was subsequently transferred to the Kansas City Gas Co. as house heating and industrial engineer. His next position was that of house heating and industrial engineer with the Joplin Gas Co., Joplin, Mo., and in April, 1930, was transferred to the Arkansas Natural Gas Corp. at Shreveport, La., as new business manager of Southern Cities Distributing Co., which position he held until his transfer.

Mr. McIntyre first became associated with the Doherty interests in 1923, when he joined the Public Service Co. of Colorado at Denver, where he was engaged in merchandising activities. In 1929, he was transferred to Shreveport where he assumed charge of the Industrial Development Department of the Southern Cities Distributing Co. When Mr. Wilson was transferred to Little Rock. Mr. MacIntyre was made manager of Southern Cities' New Business Department.

Kettleman Hills Men Organize New Chapter of C.N.G.A.

A new chapter of the California Natural Gasoline Association was organized at Coalinga, Calif., on October 6 by men in the Kettelman Hills district interested in the production of natural gasoline. Walter Boyce, Western States Gasoline Co. was chosen chairman and Gale Carbiener was elected secretary. A board of directors will be named at the next session.

4,000,000 c.f. Well Proves Territory

The Blackwell Oil and Gas Co.'s Abbott No. 1 tests, three miles northeast of Ada in Pontotoc County, Okla., was brought in for an estimated 4,000,000 cubic feet of gas from a depth of 1,030 feet, in October, opening a new gas territory.

Analysis of S. F. Gas Appliance Ordinance

By H. C. Ross

Utilization Engineer, Pacific Gas and Electric Company

IN THE preparation of San Francisco's new Gas Appliance Ordinance, the endeavor was to obtain the fundamental or basic requirements which must be observed to insure *safety and satisfactory service.* It was necessary to give local policies consideration that could be construed as being in accordance with good practice. Interpreting the requirements governing the sale and installation of house gas piping and gas appliances as minimum standards, the advantage is apparent.

The ordinance authorizes the Department of Public Health to prepare and adopt rules, regulations, etc., to assure safety and protect life, health and property in the sale, installation and use of gas appliances. They may consider A.G.A. or other national requirements. This makes possible a far-reaching policy of not only preventing the sale but the use of unsafe appliances, and is one of the heretofore much needed controls.

Before any person can install, maintain, or repair any gas appliance and/or house gas piping, he must pass an examination and obtain a certificate of competency. This makes possible the elimination of the irresponsible who creates hazards and causes customers to question the worth of gas service.

Minor repairs such as adjustment of appliances, replacement of parts, repairing leaks and similar work may be done under certificate of competency without obtaining a permit, if performed in accordance with the provisions of the ordinance. It is permitted that employers' license cover work done by his employees; also that the responsibility for work so performed rest on the employer and his license may be revoked for violation by his agent. This forces a more exacting supervision of work performed on customers' premises.

The inspector is authorized to order the disconnecting of appliances or gas piping connected without inspection, or that may be found defective or dangerous to life and property, and their use is prohibited until assessed by the inspector. This makes possible the correction of those installations which are deterrent to good service and a source of recurring complaints.

All domestic gas appliances may be installed and supplied with gas prior to inspection, provided a "Permit for Use Tag" is attached. This permits the immediate use of domestic gas appliances by the customer and the establishment of service without repeat calls.

The ordinance has many provisions for the safe handling of gas that heretofore have not been enforced. For example, only authorized employees of the utility may turn on or reconnect gas service; gas may not be turned on unless all outlets are connected to appliances or securely capped or plugged with suitable fittings, and location of and protection for gas meters is provided.

The location of appliances for safe operation is well covered. Water heaters must be properly connected to a vent and cannot be installed in bathrooms, sleeping rooms, or in recesses. Sixteen square feet floor area is required with permanent ventilation to properly support combustion. Automatic storage water heaters are required to have automatic shut-off for gas when combustion is not taking place at the pilot.

Gas space heaters of the unvented type are prohibited in sleeping rooms and are restricted in their use.

The installation of gas furnaces is very definitely covered from all angles. Conversion burners must be installed in accordance with provisions that eliminate the possibility of having this desirable business jeopardized.

Under ventilation the following gives a setup that makes for safer and better operation of appliances: "No gas appliance shall hereafter be installed or any gas appliance replaced unless the room or place where such a gas appliance is located is ventilated so as to properly support combustion."

"No gas appliance shall hereafter be installed or any existing gas appliance replaced unless the same shall be vented to a flue which shall be the full size of the appliance vent opening, etc."

"No damper shall be installed in any vent connection, etc."

Gas refrigerators, irons, mangles, and washing machines using less than 5,000 B.t.u.'s are not required to be vented.

Heating appliances designed to be used unvented must be equipped with approved cut-off valves which automatically shut off gas when combustion is not taking place at the burners, and permanent ventilation of the room must be provided.

Approved flexible metal tubing may be used for connecting gas appliances designed for portable use, such as washing machines, irons or other appliances, the location of which must be changed during operation. The tubing cannot exceed 6 feet in length and shut-off cock must not be between tubing and burners, but installed on gas supply pipe. This item removes a source of many complaints and undue happenings.

The installation, maintenance and repair of chimneys, vents and flues, as well as ventilation and location of appliances has been well covered.

Thomas Now Manager of Watsonville District for Coast Counties

Frank S. Thomas, formerly manager of the Northern Division of the Coast Counties Gas and Electric Co., Pittsburg, Calif., has been promoted to the position of manager of the Watsonville District, upon the resignation of N. E. Paulsen, former manager. Mr. Paulsen is with the Portland Gas and Coke Co. at Marshfield, Ore.

William A. Clampitt, former assistant new business manager in charge of the Northern Division succeeds Mr. Thomas as manager of that area, which includes Contra Costa County.

Atlantic, Iowa, Now Served With Natural Gas from Kansas

Natural gas change-over was begun at Atlantic, Iowa, by the Iowa Electric Co. on October 21. Frank Johnson is local manager for the company, which headquarters at Cedar Rapids, Iowa. Nine hundred meters are being changed. The work of changing over was carried on under the direction of Robert F. Galpin of Muscatine, Iowa, general superintendent of distribution of the Iowa Electric Co.

BUTANE - PROPANE NEWS

Covering Liquefied Petroleum Gas Service

TABLE NO. 1. CLASSIFICATION OF U. S. FAMILIES BY TYPE OF FUEL USED

Fuel	No. of Families	Pct.
Piped Gas (Manufactured, Natural and Liquefied Petroleum Gas)	16,009,684	53.4%*
Wood, Coal and Miscellaneous	6,820,462	22.7%**
Gasoline, Kerosene and Oil	6,000,000	20.1%**
Electricity	1,000,000	3.3%†
Bottled Gas	150,000	.5%††
Total	29,980,146	100.0%

*Jan. 1, 1932, A.G.A. Consumer Survey.
**Estimated.
†Approximate, Jan. 1, 1932.
††Jan. 1, 1932, Dept. of Commerce, E. B. Swanson.

Bottled Gas Growth Is Stimulus to Many Related Industries

By R. W. THOMAS
*Philgas Company**

THOSE of us engaged in bottled gas activities have the privilege of being connected with one of the most rapidly growing, most promising, and most depression-resisting industries in the United States. We are most fortunate, for having reared our industry in the face of several years of general adversity, we have learned a number of valuable lessons in economics and ethics and should, as a result thereof, prosper mightily in years to come if we will but build diligently and honestly on the firm foundations that are now well under way.

Market Possibilities

Let us now consider our markets. Propane is ordinarily distributed as "Bottled" gas. It is self-vaporizing at very low temperatures and can be successfully used as fuel anywhere in the United States. It finds a ready market:

(a) In the suburban fringes of the larger cities where gas mains have not yet been extended to completely serve the territory,

(b) In the smaller towns where neither natural, manufactured, nor propane or butane gases are yet supplied by pipe line, and

(c) In rural sections where piped gas will probably never be available.

A close scrutiny of these "new markets" will prove valuable. There is now under way a great exodus from the cities to the suburbs, due to cheap high speed automobiles, bus, and rail transportation, where homes are larger, where single houses are the rule rather than the exception, where more home cooking is done, less food is bought ready prepared and fewer meals are eaten in hotels or restaurants; where house heating is a problem unless gas fuel is used; where lots are larger and more pipe per meter must be run, and where the cost of piped gas service is likely to be high owing to the distance of the homes from the streets or highways. It is apparent that the suburban and close-in small town potential market is growing, and that a new crop springs up as fast as the cities expand and make the outlying territories urban.

The United States has a population of 122,775,046 (1930 census) with an average of 4.1 persons per family, or 29,980,146 families. The cooking fuels used by these families are divided approximately as given in Table No. 1.

Excluding the "Piped Gas," "Electricity," and "Bottled Gas" classifications, we find that there are over 12.8 millions of families in this country using low form value, inconvenient domestic cooking fuels. Unfortunately for us, a large part of this immense market is widely scattered and thereby difficult to profitably cultivate. On the other hand, it is but slightly vulnerable to piped gas extensions, and only partially open to electric exploitation (the latter primarily because of high electric cooking rates necessary on the majority of rural lines). We may safely assume that one-half million of these potential gas consumers will eventually be served with piped propane or butane gas (on January 1, 1932, 14,400 customers were being supplied with piped propane or butane in 118 towns, and the number of customers has approximately doubled in the meantime). Another 1.3 millions of these non-gas homes may eventually have piped natural or manufactured gas or electricity for cooking. A simple deduction leads one to the belief that 11 million families will still remain in the United States using the inconvenient low form value fuels, most of them being located in suburban or rural territory where piped gas can never be made available. This field belongs exclusively to bottled gas or related forms of fuel distribution. Let us grant that only one in 10 of these families will have the purchasing power to buy bottled gas service or will be located at points where the delivery of bottled gas is practical and profitable. We will then have a potential of at least 1,100,000 additional bottled gas users.

Appliance Markets

The bulk of the expenditures made by these potential new bottled gas users (also by piped propane, butane, manufactured and natural gas eventual users) will be garnered by the appliance manufacturers and their dealers, for with natural gas systems the cost to the customers of the average appliances (usually a range and in many cases a water heater) will equal if not exceed the bottled gas companies' investment per customer in a propane bulk station, cylinders, and delivery and utilization equipment.

*Presented before the National Bottled Gas Association, October 13, 1932.

TABLE NO. 2. MARKET FOR BOTTLED GAS EQUIPMENT

Item	Cost	Per Cent		Total per Million Customers
1 —Full Cabinet	$10.00	16.67		$10,000,000
1 —Regulator and mercury seal	4.50	7.50		4,500,000
1 —Manifold including two pigtails	5.00	8.33	14.15	5,000,000
3 —Cylinder valves	3.50	5.82		3,500,000
1 —Padlock	.30	.50		300,000
1 —Shut-off cock	.70	1.16	7.83	700,000
25'—Pipe and fittings (average)	4.00	6.67		4,000,000
3 —ICC No. 4B-240, 100 lb. cylinders	28.00	46.70		28,000,000
1 —Concrete base	.75	1.25		750,000
Freight	3.25	5.40		3,250,000
Total	$60 00	100.00		$60,000,000

This appliance market is practically a virgin field. All homes must and do have some cooking device, but very few homes now without gas service are equipped with gas appliances. Occasionally a city dweller moving to the suburbs will bring a gas range along, hoping that gas will eventually be available, thus indicating the almost universal desire for gaseous fuel. The equipment that must be replaced is that now burning coal, wood, kerosene, gasoline, and perhaps electricity. The modern urge for convenience, speed, safety, health, cleanliness, time-saving, and attractiveness in the kitchen is making the replacement of the older inconvenient, and perhaps outmoded cooking and water heating equipment comparatively easy. The used appliance problem is a large one, but is being successfully overcome by liberal trade-in allowances, aggressive merchandising and advertising, and either destruction or shipments of the old equipment to completely remove it from the local markets. Although the sale of space heaters, laundry driers, incinerators, gas-fired furnaces, etc., is not as easy with high priced "bottled" gas as with the cheaper piped gas, these and other gas consuming specialties will bring additional revenue to appliance manufacturers and dealers, will furnish customers with added convenience, and will enlarge the fuel load of bottled gas manufacturers, distributors and dealers.

One point worthy of comment which has been learned from experience in merchandising bottled gas in suburban and rural communities is that a large number of the prospective customers, particularly the older ones, are sufficiently "set in their ways" to make the merchandising of modern gas appliances a real problem. Some of these customers have to be taken from their old coal or wood stoves by an easy transition through a kitchen heater or combination range to the modern gas appliance.

The same progressive steps in a great many instances must be taken in the case of water heaters. The galvanized range boiler in the kitchen connected to a coil or water back in the coal or wood stove will not be relinquished by the customer without a struggle. In most cases it is expedient to install an efficient gas side-arm heater in order to plant the germ of the gas-fired water heater idea without the large investment consequent to the full automatic set-up. Continued advertising to the side-arm heater customers, particularly by direct-by-mail-literature, will eventually result in a reasonable percentage of them going to the full automatic insulated heater.

Experience has indicated that automatic water heating can eventually be sold in homes where purchasing power is large and the standards of living and of cleanliness are high. However, it is progressively more difficult to initially sell and to continually keep on the line the more expensive automatic heaters as we descend to the larger markets made up of customers having medium or low buying power.

Our average customer will initially spend (retail) at least $75 for appliances, and, owing to later purchases of additional appliances, such as water heaters, will bring the average appliance investment up to around $100 per customer. Appliance manufacturers, dealers, and salesmen will, therefore, eventually garner 110 millions of dollars for initial appliance investment probably divided about evenly between the manufacturers and wholesalers on one hand, and the retail dealers and salesmen on the other.

A point which the appliance manufacturers should not and will not overlook is the appliance replacement market. If we assume that the small town, suburban and rural bottled gas markets are eventually cultivated to the extent suggested above, we find that we have over 100 million dollars invested in appliances. If the annual replacement amounts to 12½ per cent (8 years), we would have an eventual replacement market of practically 13 million dollars annually.

The 1929 U. S. Department of Commerce "Census of Manufacturers" shows that gas cooking stove and range production totaled $56,846,562 (F.O.B. factory prices) for the year 1929, and $56,760,064 for the year 1927. The increase was almost negligible. Bottled gas is the stove industry's "best bet" for future growth and expanding markets.

TABLE NO. 3. LIQUEFIED PETROLEUM GAS GROWTH, 1922-1932

Year	Total Marketed Gallons	% Increase from Preceding Year	Per Cent Marketed as Bottled Gas	Pounds Marketed as Bottled Gas	Number Bottled Gas Customers	Av. Lbs. Per Customer Per Year
1922	222,641*					
1923	276,863*	24.0				
1924	376,488*	36.0				
1925	403,674*	15.0				
1926	465,085*	23.0				
1927	1,091,005*	134.0				
1928	4,522,899*	315.0			20,000*	
1929	9,930,964*	120.0			55,000*	
1930	18,017,347*	82.0			117,000*	
1931	28,502,819*	58.0	54.0*	64,500,000	150,000*	430
1932	32,500,000	11.4	53.3	73,100,000	170,000	430

*U. S. Department of Commerce data published Feb. 11, 1932.
(1932 figures estimated by R. W. Thomas, Philgas Co.)

Equipment Markets

The total investment necessary to supply over 1,100,000 of easily potential new bottled gas customers will vary from $50 to $150 per customer with an eventual average of about $90, therefore, approximately 100 millions of dollars of investment (exclusive of fuel, manufacturing facilities, tank cars, etc.) will be necessary within our industry to develop our growing business.

Aside from capitalized development and merchandising costs, the investment in physical equipment per customer will approximate $60, not including installation expense. Of this, the cylinder manufacturers will get the lion's share, the approximate division for a conventional two-cylinder outfit being shown in Table No. 2.

In addition, markets for bulk station equipment such as tanks, building, pumps, pipe fittings, etc., will be opened, and the makers of rectifying equipment tank cars, storage tanks and pipe line materials will benefit from the additional liquefied petroleum gas manuacturing and transportation facilities made necessary by the growth of the industry. The railroads and pipe lines will gain large revenue from the movement of bottled gas itself, and the bulk stations and customers' equipment necessary for its use. The automobile industry will sell a large number of trucks, salesmen's cars and other vehicles, for the bottled gas industry is essentially an industry on wheels. The labor

(Continued on Page 38)

Handbook of Butane-Propane Gas Comes from Press

EARLY in November *Western Gas* brought from the press the first edition of the *Handbook of Butane-Propane Gases,* which has been under preparation for the past several months. Contents of the volume deal with both general and technical phases of the liquefied petroleum gas industry in its several branches—production, transportation, distribution, utilization. Particular interest attaches to the publication due to its being the first compilation of reference data pertaining to this industry.

This first edition of the *Handbook of Butane-Propane Gases* represents the joint effort of a score or more individuals directly associated with butane-propane enterprises. Its range of subject matter is suggested by the following chapter outline:

Chapter I: A Chronology of Liquid Gas Development. By A. N. Kerr, Imperial Gas Company, Long Beach, Calif., and C. L. Kerr, Rockgas Products Company, Pittsburgh, Pa.

Chapter II: Physical Properties of the Liquefied Petroleum Gases. By James B. Garner, Rolla W. Miller and Milton D. Crane, Hope Construction and Refining Co., Pittsburgh, Pa.

Chapter III: Properties of Butane-Propane Mixtures and Relation of Properties to Temperatures. By Paul Page Austin, Jr., Standard Operating and Management Corp., San Francisco, Calif.

Chapter IV: Composition and Analytical Determination of Liquefied Petroleum Gases. By Walter J. Podbielniak, Research Chemical Engineer, Tulsa, Okla.

Chapter V: The Manufacture of Liquefied Petroleum Gas. By G. N. Hile, Standard Gasoline Co., San Francisco, Calif.

Chapter VI: Transportation of Liquefied Petroleum Gases. By Frank S. Burt, General Petroleum Corp. of California, Los Angeles, Calif.

Chapter VII: The Use of Butane and Propane with Manufactured Gas. By Leon J. Willien, Byllesby Engineering & Management Corp., Chicago, Ill.

Chapter VIII: Central Plants for Butane-Air Service. By Herbert N. Witt, Brokaw, Dixon, Garner & McKee Engineering Co., New York, N. Y.

Chapter IX: Central Plants for Undiluted Butane-Propane Vapor Service. By Frederic A. Hough, Southern Counties Gas Co. of California, Los Angeles, Calif.

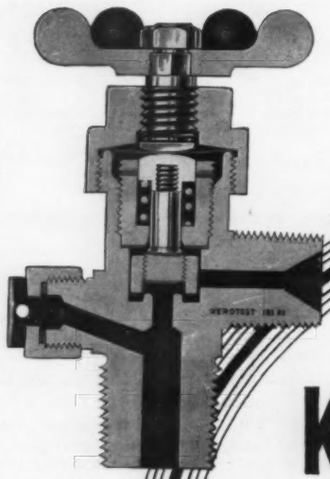
Chapter X: Liquefied Petroleum Gases as Industrial Fuels. By W. M. Hepburn, Surface Combustion Corp., Toledo, O.

Chapter XI: Appliance Utilization of Liquefied Petroleum Gases. By Walter M. Berry, Consulting Gas Engineer, Los Angeles, Calif.

Chapter XII: Bottled Gas Distribution of Liquefied Petroleum Gases. By George H. Finley, Western Gas, Los Angeles, Calif.

In addition the Handbook carries a Catalogue Section giving detailed information on products designed for butane-propane service; a Buyers' Guide listing firms supplying equipment, appliances or services for the industry; a Directory of Central Plants enumerating the operating town plants distributing piped butane-propane gases; a complete Bibliography covering the literature on liquefied petroleum gases; and a detailed subject index to the book's contents.

Copies of the Handbook of Butane-Propane Gases may be ordered at $5 each from *Western Gas,* 124 West Fourth St., Los Angeles, Calif.



KEROTEST

KEROTEST PROPANE CYLINDER VALVES

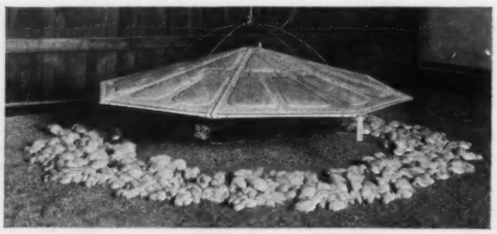
Equipped with triple metal diaphragms insuring long, continued gas service . . . seat inserts and diaphragms readily renewed . . . positively sealed against leakage . . . a valve that has successfully withstood a pressure of 11,250 lbs. per square inch by the Underwriters Laboratories as well as a durability test of 50,000 complete cycles of opening and closing without failure. Write for descriptive literature.

KEROTEST MANUFACTURING COMPANY
PITTSBURGH, PA.

GAS BROODERS

Are you getting your share of the vast potential fuel load for the brooding of baby chicks and turkeys? Gas when used with the Hart Brooder is by far the best and most economical means of brooding. The Hart Co. are pioneers in the manufacturing of gas brooders, having sold on the Pacific Coast more than any other make. Many gas companies are substantially increasing their sales by handling the Hart Brooder line. One average poultryman when brooding consumes several times as much gas as the ordinary household user.

Send at once for descriptive literature, prices, discounts, etc., on our complete line of thermostatically controlled brooders.



Flashlight photograph of chicks sleeping under a Hart Gas Brooder at the world's largest poultry ranch where Hart Brooders are used exclusively. One hundred and forty-four brooders in operation the year round brooding a thousand chicks to the brooder.

H. W. HART MFG. CO., P. O. Box 404 W, Santa Monica, Calif.

National Bottled Gas Assn. In Annual Session

THE second year's program of the National Bottled Gas Association got under way at the association's annual meeting held in New York City, October 13, with the election of a slate of officers to serve during the coming year.

Mark Anton, who has served as president of the group since its organization a year ago, was re-elected as president, with Frank Pope and C. W. Manville as vice-presidents. Richard F. Ely was re-elected secretary and H. Emerson Thomas was named treasurer.

Mark Anton

The following were elected to serve on the board of directors: C. H. Manville, Frank Pope, Mark Anton, Don Kelley, H. Emerson Thomas, Richard F. Ely, M. G. Dial, J. E. Balsley, H. E. Double and A. B. Geroy.

Approximately 60 members of the industry attended the general meeting held in the afternoon. This meeting was preceded by an executive session during the forenoon and a board meeting on the previous day at Atlantic City.

Three speakers addressed the group at the luncheon: R. W. Thomas of Detroit, vice-president and general manager of Philgas Co., subsidiary of Phillips Petroleum Co., F. D. Richards, vice-president of the Campbell Ewald Co., Detroit, and John A. Kienle, president of the Compressed Gas Manufacturers' Association, New York.

R. W. Thomas' address dealt with the market available to gas appliances through the sale of bottled gas, and is given in this department of *Western Gas*.

Mr. Kienle spoke of the benefits to be derived from the proposed closer affiliation between the National Bottled Gas Association and the Compressed Gas Manufacturers' Association, a subject now before a committee of both organizations for consideration, which will be acted upon at the next meeting of the organization to be held in January.

H. E. Newell of the National Board of Fire Underwriters addressed the general session, following the luncheon, as did Paul Endicott, vice-president and manager of the Retail Division of Philgas Co.

Mark Anton's speech before the body advocated as of primary importance a closer study of the differences between the small independent distributor in the group and the large marketing corporation in order that common bonds of action might be established and differences adjusted.

He also commended the work being done by both producers and equipment manufacturers to stabilize the industry, at the same time calling upon all members for active participation in the affairs of the organization.

May Organize Regional Unit

It was announced that Paul Ford, publicity director of the association, would shortly make a trip to the Pacific Coast in the interest of organizing a regional unit in that area. The next meeting of the association will be held in January.

Liquefied Natural Gas Co. Gets "Key" Franchise

PLANS of the Liquefied Natural Gas Corp. of Minneapolis for taking gas service to a score or more of Minnesota cities and towns are coming to a head, with a 20-year franchise having been granted to the company at Tracy, Minn. The franchise gives the company authority to construct a gas plant and distribution system there. Undiluted propane gas will be served, the plant also being used as a central storage depot for bottled gas to serve towns distributed over a radius of 50 miles. Tracy will be a "key town", franchises having also been granted in Sanborn, Comfrey, Lamberton, Jeffers, Butterfield, and Currie. Applications are reported to have been made in many others, including Wilmont and Westbrook. H. H. Henley, engineer for the company is actively engaged in running surveys and obtaining franchises.

It is understood that Liquefied Natural Gas Corp. is also entering into an agreement with the American Gas Construction Co. to take over certain franchises owned by the latter company for the service of liquefied petroleum gas in towns in Minnesota and Wisconsin.

Application for extension of a franchise granted to the American Gas Construction Co. at Wasconsin Rapids, Wis., is reported to have been made by Mr. Henley. The proposal states that the Liquefied Natural Gas Corp. will be prepared to build a plant and have it in operation by June 1, 1933 under this franchise, which has been assigned to pany by the grantee.

Officers of the Liquefied Natural Gas Co., are: Lee H. Barker, president; R. J. S. Carter, vice-president, and Perry Snyder, secretary, all of Minneapolis and C. F. Patterson of St. Paul, treasurer.

Union Adding to Wilmington Stabilization Plant

Construction of a new pressure distillate stabilizing plant, which will be used to increase the production of the valuable fractions of cracked gasoline, was begun in October by the Union Oil Co. at its Los Angeles refinery at Wilmington.

The new stabilizer will supplement the natural gasoline stabilizing plant constructed and placed in operation by Union more than a year ago.

A total of $108,000, $50,000 of which will be expended for steel and the remainder on labor and miscellaneous materials, has been allotted to build the new plant. An additional $40,000 will be spent on extending pipe lines and installing pumps and other necessary supplementary equipment. Consolidated Steel Corp., Los Angeles, has the fabrication contract and Fluor Corp. is installing the plant and supplying the cooling tower equipment.

Approximately three months will be required to complete the project.

Newly Formed Company to Serve Indio and Coachella

Charles E. McCartney, Petrolane Co., Ltd., Long Beach, Calif., has been granted a permit to operate the liquefied petroleum gas plant at Indio, Calif. The plant was constructed some time ago and has been operated by the city of Indio. Mr. McCartney has arranged for the transfer of the property to the Southeastern Service Corp., which will operate the plant and system, and will extend service to Coachella shortly.

SCAIFE

I. C. C. CYLINDERS

A majority of distributors of Liquefied Petroleum Gas now use the Scaife cylinder.

SAFE

ECONOMICAL

GOOD LOOKING

FOUNDED 1802

WM. B. SCAIFE & SONS Co.

Oakmont, Pa. (Pittsburgh District)

New York Pittsburgh Chicago

GROBLE REGULATORS & GOVERNORS

Complete Line of Regulators for

Natural, Manufactured, Butane and Propane Gas

Pacific Coast Representative,

T. G. ARROWSMITH COMPANY,

661 Howard Street San Francisco, Calif.

Phone Garfield 8419

GROBLE GAS REGULATOR COMPANY

Office and Factory: Anderson, Indiana

Bottled Gas Benefits Related Industries

(Continued from Page 35)

necessary to man this industry and to provide a high grade gas service to users of bottled gas will run into large figures.

Fuel Markets

The liquefied petroleum gas industry, of which bottled gas is a major part, has experienced a remarkable growth as summarized in Table No. 3.

Assuming that the *average* bottled gas customer pays a net of 11¼ cents per pound for fuel, the gross revenue from gas sales would have been $7,250,000 in 1931 and should amount to $8,250,000 in 1932. If the industry reaches the total of one million customers, the gross annual gas revenue will total $45,000,000, based on the then probable average of $45 gross revenue per customer per year, or an average net gas bill of $3.75 per customer per month. Only a small part of this income will go to the fuel producers, by far the greater portion being accounted for by transportation, distribution, and customer servicing costs, by fixed charges, and by the possible return on the huge investment.

Intelligent load building through promotional work with customers already under contract is one of the most vital future activities of the industry. Only by volume of fuel sales, by high customer saturation in a given territory, and by the consequent increasing of gross income as compared with operating expenses and fixed charges, can our industry make a fair return on its investment and justify its existence, its perpetuation and its future growth.

This discussion of fuel markets would not be complete without considering the available supply of raw material from which bottled gas (largely propane) can be produced. At the high level of 40 pounds average per customer per month, one 40,000-pound tank car of propane per day will supply 30,000 customers. One million customers would consume, at this rate, 33 cars per day. Over 700 cars of propane per day are available in the United States from natural gasoline sources alone, and perhaps an even greater amount can be supplied by petroleum refiners. We need not concern ourselves about overselling the potentially available bottled gas supply.

Conclusion

It is apparent that the primary problems of our industry are along the lines of vigorous merchandising, aggressive advertising, fair trade practices, cooperation, orderly marketing at prices which yield a reasonable net profit to legitimately conducted organizations, and serving the public in a manner that will gain their continued and ever-increasing patronage. We have lately heard many references to the "forgotten man." He is more important to us than he is to the politicians. We can only enlarge our markets, first by territorial expansion, and second by increasing the number of users of our products and our services in our chosen areas. The latter is the more important. Economies in sales, distribution, and service are our primary means of taking bottled gas from its present semi-luxury class to the much desired necessity class. Mechanical refrigeration has made wonderful strides in that direction and we would profit by the experience and the example of that industry. Bottled gas must be made economically available to the relatively low income class of family in order to fully realize the enormous latent possibilities of our potential markets. Good management in our industry will eventually accomplish this end without price wars and without sacrificing the necessary legitimate margin of profit.

While our executives, our economists, and our coordinators are engaged in the all important progress, our engineers, scientists, designers and inventors must not neglect

(a) Mechanical improvements,

(b) Simplification of equipment,

(c) More direct means of breaking bulk on our commodities and effecting straight-line economical distribution,

(d) Safety practices and precautions,

and all of the numerous allied problems. Our present practices are not all ideal. We must continue to remain open minded and to make the best of all opportunities to improve, to effect economies, and to progress.

We do not suffer for lack of raw materials or potential markets. Our problem is how rapidly and by what means can we develop profitably and systematically the possibilities that lie within our reach.

Courses of Interest to Petroleum Engineers Offered by University

Two courses offering valuable information for gas and oil engineers are to be opened during the month of November by the University of California's Extension Division in Los Angeles.

Graydon Oliver, consulting engineer of Los Angeles, and new affiliate with the extension faculty in Los Angeles, will instruct the two courses.

"Natural Gas Engineering", a class which will study the origin of gas, metering and measuring of natural gas, pipe line construction, transmission, compression and use of natural gas, will open on the evening of November 15 at 7 o'clock in Extension headquarters at 815 South Hill Street, Los Angeles. The course will include eight meetings.

"Utilization of Liquid Gas" is the title of the second course offered, which opens on the evening of Thursday, November 17, includes eight meetings of two hours each from 7 to 9 weekly on Thursdays. Sources of supply of liquid gas and its various uses, its distribution, computations of pipe line systems, estimates of costs and other pertinent subjects will be covered by Mr. Oliver.

Williams Now at Coquille for Natural Gas Corp. of Oregon

L. R. Williams has been named to manage the Coquille office of the Natural Gas Corp. of Oregon, succeeding Robert H. Rush. Mr. Williams was formerly with the Natural Gas Corp. of California at El Centro, Calif.

"For Prospects Only" Is Keynote of Fall Electrolux Campaign

Electrolux Refrigerator Sales, Inc., Evansville, Ind., opening its Fall sales campaign, sent out an interesting prospectus "For Prospects Only" to the company's dealers.

The campaign is based on the premise that the next million refrigerators will be sold to prospects who have been carefully and thoroughly cultivated. It is the purpose of the campaign to bring these prospects into action during the Fall and Winter months. There are four mailing pieces carrying out the theme "It's Your Money." Each piece endeavors to convince the prospect that Electrolux is the best buy for his refrigeration money.

The series of four mailing pieces is offered to Electrolux dealers without expense on their part.

As indicated in this prospectus to dealers, there are three obligations to be carried out in this sales campaign. The first obligation is to see that the money the prospect spends for refrigeration is spent to his best advantage. The second obligation is to the individual salesman who needs fresh stimulation that such a campaign offers to provide a definite task for his daily efforts. The third obligation is to the dealer (or gas company) to see that every salesman calls on the prospect at least twice during the period of the campaign.

Panhandle Power and Light Co. Operating Under New Rates

The Panhandle Power and Light Co., Borger, Texas, under authority granted by the Texas Railroad Commission, has announced a new rate schedule based on the number of rooms in a residence or the amount of floor space in a building.

The minimum will be $1 for a residence of two rooms. The rate will be figured at 35 cents for each additional room. The same minimum will apply on the commercial rate for the first 400 square feet of floor space, and 35 cents a month will be charged for each additional 200 square feet of space.

Texas Gas Utilities Co. Installing Gas Heat in San Felipe Schools

Texas Gas Utilities Co., Del Rio, Texas, on October was awarded contract to install a complete gas heating system in three buildings in the San Felipe Independent School District in and around Del Rio, Texas. Payne floor furnaces will be used for all first floor rooms and Payne consoles on the second floor. The job will amount to approximately $1,600 and will make all schools in the district completely served with natural gas.

Hugoton Municipal Gas System Soon to Get Under Way

Plans for the new municipal gas plant and system at Hugoton, Kan., have been completed by F. E. Devlin Engineering Co. of Wichita, Kan. The new system will require about 12 miles of pipe and two regulator stations. The line will be a 5- and 6-inch, welded belt line, serving gas at low pressure. When complete, the system will be sufficient to take care of a population of 5,000.

Sixteen-Mile Line to Extend to Red Oak, Okla.

The Naylor Pipe Co., Chicago, recently received an order from the Le Flore County Gas & Electric Co., Poteau, Okla., for 16 miles of 6-inch Spiralweld Toncan iron pipe in 40-foot lengths. The pipe will be used on a high pressure natural gas trunk line from Red Oak, Okla., to the Le Flore company's main line.

Detroit Jewel • Garland

Super DeLuxe

Largest cooking top of any console type gas range on the market

The woman who has this gas range in her kitchen will use it to the fullest extent. Its large cooking top (27x20); its roomy oven with heat control; and its other modern features all encourage a maximum amount of cooking. Yet it represents real economy, for it is priced at a figure that recalls the price levels of 20 years ago. At the same time it provides *every modern feature of the highest priced gas ranges.* It creates the urge to buy and the urge to use. And it affords a full margin of profit for you. Write for complete catalog and list of trade discounts.

Detroit-Michigan Stove Company-Detroit, Michigan

New Garland

Heavy Duty Gas Ranges for hotels, restaurants and public institutions

Profit Builders

There is a double profit for you in the new Garland Heavy Duty Gas Ranges and the new Sanitary Garland Deep Fat Fryer. You make a profit on sales and you retain on your books the big, profitable consumers of gas.

Both in appearance and performance, the new Garland Heavy Duty Gas Ranges are well suited to win sales in today's market.

Seven big new features—smooth, sanitary fronts; all hot top, with nine single jet burners; heavy 1-½ inch insulation around oven; balanced oven door; enameled oven linings; cool valve handles and oven door handle; oven heat control (optional).

Be prepared to retain your big outlets and win new ones. Send for catalog and prices.

The New Sanitary Garland Deep Fat Fryer

A business builder for the hotel or restaurant and a business builder for you, because it is the only sanitary fryer on the market. Smooth flush front with rolled top edge—all working parts concealed but readily accessible by door. No boiling over of grease, due to the raised edge extending completely around top of bowl. Body of heavy steel in baked ebonite finish. Bowl and top cast in one piece with sanitary porcelain enamel finish. Thickly insulated with Therminsul which will not absorb moisture or odors. Don't overlook this market. Write today for further information and prices.

Garland Division

Detroit-Michigan Stove Company

Detroit, Michigan

Phillips Named Vice-President, Central West Public Service Co.

R. A. PHILLIPS has been appointed to the position of executive vice-president of the Central West Public Service Co., Omaha, Neb., according to Frank Milhollan, president of the company.

R. A. Phillips

Mr. Phillips will continue to make his headquarters at the general offices of the company in Omaha, where he has served for the past three years, first as auditor and later as assistant to the president. Previous to that time Mr. Phillips was with the company at its Sioux City, Iowa, offices. He was graduated from the University of Michigan, following which time he spent several years in public accounting work before becoming associated with the Central West Public Service Co.

In addition to the regular duties of his office, Mr. Phillips will have direct supervision over the properties in the Western Division of the company, filling the position left vacant by the recent death of Ray Irons. The Western Division of the Company consists of properties located in the states of North and South Dakota and Nebraska. Management of the company's Sioux City properties will continue under the direction of J. A. Mallory.

R. B. Goodrich, accountant, will succeed Mr. Phillips as assistant to the president.

Northwestern Natural Gas Co. Adds Three New Towns

November 1 was the date set for completion of Northwestern Natural Gas Co.'s extension to serve Granger, Zillah and Toppenish. The new line is approximately 20 miles long, and with the distribution systems in the three towns, was constructed at a cost of about $250,000. The company is carrying on a drilling program in the Benton County field for an additional supply of gas, and plans to make other extensions in its service area when additional supply is available.

Miss Reed Victim of Fatal Automobile Accident in Vancouver

Miss Agnes M. Reed, head of the domestic economy department of the British Columbia Electric Railway Co., Ltd., was recently killed instantly in an automobile collision in Vancouver. Miss Reed was in charge of the entire domestic economy department of both the gas and electrical divisions of the company, and had been with B. C. Electric since 1917.

Hutchinson Gas Co. Extending Mains and Adding Services

Extensions of gas mains by the Hutchinson Gas Co., Hutchinson, Kan., to serve 100 additional customers, are now under way, according to a statement credited to C. M. Carter, superintendent of the company. Cost of the improvements will total about $40,000. A. M. Grall is manager for the company at Hutchinson.

Natural Gas Exhibit at L. A. County Fair

NATURAL gas for cooking, refrigeration, water heating, space heating and for a number of industrial purposes was featured at the Los Angeles County Fair, held at Pomona, Calif., in September.

The display shown in the accompanying illustration was visited by thousands, and a staff of six demonstrators were busy all day and far into the evening, explaining the many advantages of the modern gas appliances set up for their inspection.

The cost of the exhibit was provided jointly by the three gas utilities, Southern Counties Gas Co.; Southern California Gas Co.; and Los Angeles Gas and Electric Corp., the direction of the display being in the hands of Walter E. Keefe, district manager for Southern Counties at Pomona.

In addition to the domestic exhibit, the three companies put on an industrial display in another section of the fair. Here, under the direction of Charles Ferry, industrial engineer for Southern Counties Gas Co., the various industrial uses for natural gas were explained, and a clay worker with his pottery wheel gave an interesting demonstration in the production of jars and pots of almost every shape and design.

Change-Over at Moline and Rock Island, Ill., Due

Announcement was made on October 1 by R. B. MacDonald, president of Peoples Power Co., that a contract had been signed to supply Moline, Rock Island, East Moline, Silvis and adjoining territory with natural gas from the main line of the Natural Gas Pipe Line Co. of America, Chicago. Supply will be available about December 1. Cost of the project in addition to changing of appliances is estimated at $350,000 and will include a new 12-inch supply line between four and five miles long, a feeder main of about the same length, and governors and regulators, as well as a Moline city gate station, where the gas will be sent into existing mains. Improvements are also being made in the distribution system.

The company's storage holders will be kept in service, and the manufacturing plant will be used for peak load or emergency supply.

Plans for serving Davenport, Iowa, which was to have been served from the same extension as Moline, now call for construction of a separate lateral from the main line of the Natural Gas Pipe Line Co. of America. Peoples Light Co., affiliated with Peoples Power Co., distributes the gas at Davenport.

R. R. Rates Reduced to Points Where "Natural" Serves Industries

Authority has been given the railroads by the Interstate Commerce Commission to attempt to meet competition of Texas natural gas in the Middle West by reducing rates on industrial coal from mines in Illinois, Indiana and western Kentucky to destinations in Nebraska, Iowa, Kansas, Missouri, Minnesota and South Dakota. The cuts will range from 31 to 53 cents a ton. These cuts are to be made at points where natural gas pipe lines are now serving industries. Communities to which the pipe lines have not been constructed are to continue paying the present rates on their industrial coal. At some of the points where there are pipe lines the railroads proposed to disregard their presence and continue charging the present rates. The regulating body, however, refused permission to do that. The railroads also asked permission to make reductions to points to which plans in existence call for the construction of pipe lines, such as LaCrosse and Winona, Wis. Permission to meet competition at such points was denied on the grounds that the law did not authorize the regulating body to arm the railroads with power to disregard the long- and short-haul part of the law in such instances.

Red Oak, Iowa, Changed Over to Natural in October

Natural gas from Texas was turned into the gas distribution system at Red Oak, Iowa, on October 3, replacing manufactured gas served by the Iowa-Nebraska Light & Power Co. F. E. O'Malley is manager for the company at Red Oak. Supply for the town comes from the newly completed line constructed from the main line of the Natural Gas Pipe Line Co. of America. "Calodorant" is used to odorize the the gas at the town border station.

Shenandoah, Iowa, served with butane gas by the Iowa-Nebraska Light & Power Co., was also changed over, supply coming from the new carrier.

Larkin Transferred to Texarkana Office of Southern Cities Distributing

M. E. Larkin, district manager for the Southern Cities Distributing Co. at Pittsburg, Texas, has been transferred to the business department at Texarkana. The district manager's office has been abolished, and local managers of the district will report direct to headquarters, Shreveport, La.

Sales-Rental Plan for Heating Equipment

A NEW plan whereby a large gas load can be put on the line quickly has been inaugurated by the Northern Gas and Pipe Line Co., Omaha, the United Light & Power Co., and the Iowa-Nebraska Light & Power Co. All the properties of these three companies taking gas from the Northern Gas and Pipe Line system have adopted a five-year rental with option of purchase plan for all house heating equipment installed on the various lines.

The plan is limited by budget as to the number of heating jobs which will be accepted under it. The Iowa-Nebraska Light & Power Co. has a budget of 2,250 heating jobs, United Light & Power 3,000 and the Northern Gas and Pipe Line has a budget of 4,000 jobs.

The rental plan is in effect a deferred payment plan whereby the time limit is extended to a five-year period. with very small monthly payments and a 6 per cent carrying charge on the unpaid balance each month. The purchaser or renter has an option to purchase the merchandise at the end of the first year and obtain full credit for all money paid in during the first year. After the first year a sliding scale of credits is allowed toward the purchase price. In event the renter does not desire to purchase he can continue paying the rental basis for the full five years when the equipment will be deeded over to him.

A dealer-cooperative plan has also been set up by the three companies in connection with the rental plan, whereby the company agrees to carry the dealer's paper and reimburse him at the time of acceptance of the contract for the amount of the contract, and in addition, these companies will grant the dealer a load-building bonus based on the number of jobs installed by him each month. The load building bonus ranges from $10 to $15 on each job and is payable on either conversion or gas-designed equipment.

PARANITE

When the pipe line takes the bends, it's Paranite that allows safe distortion at each coupling.

OVER 10,000,000 IN USE

It's Safest to Specify PARANITE

Sold by all Leading Pipe Coupling Manufacturers

The Manhattan Rubber Mfg. Division
OF RAYBESTOS-MANHATTAN, INC.
Executive Offices and Factories
Passaic, New Jersey

Southern Gas Assn. and Regional Sales Conference To Meet Jointly

A meeting of the Commercial, Industrial and Technical Sections of the Southern Gas Association was held at Birmingham Ala., on October 17, 1932. The sections met for the purpose of outlining a program and other details for the 1933 convention of the Association. J. W. West, secretary of the Commercial Section of the American Gas Association was in attendance to assist in the planning for the Southern Regional Gas Sales Conference which will be held at the same time as the annual convention. A meeting of the Executive Committee was held on the same date.

C. E. Dougherty is chairman of the Commercial Section. B. B. Ferguson, chairman, Technical Section and L. H. Hungate, chairman, Industrial Section.

Alexander, Ill., Now On Natural

Central Illinois Natural Gas Co., a new organization, has begun the service of natural gas in Alexander, Ill., supply coming from wells drilled by the company near the town.

The Semet-Solvay Engineering Corporation invites your inquiries for

Equipment for the manufacture, cleaning and handling of gas.
Equipment for the recovery and treatment of coal by-products.
Welded steel products, piping and valves.
Producer gas and blue gas apparatus.
Engineering service, investigations and reports.

Semet-Solvay Engineering Corporation
40 Rector St. New York, N. Y.

Gas Utilities Co. Formed to Operate Oklahoma Natural

COMPLETION of a plan was announced early in October, under which Gas Utilities Co., a Delaware corporation, has acquired practically all of the assets formerly owned by American Natural Gas Corp., as well as certain other securities, including substantially 100 per cent of the common and second preference stocks and a large part of the debt other than first mortgage bonds of Oklahoma Natural Gas Corp. of Tulsa, Okla.

Under this plan Gas Utilities Co. has issued 280,000 shares of its capital stock of a total authorized issue of 420,000 shares and $3,420,000 principal amount of its collateral trust 6 per cent serial gold notes. The company has also agreed to issue 106,835 shares of its capital stock in exchange for debentures of American Natural Gas Corp. on the basis of 10 shares of stock for each $1000 principal amount of debentures. The right of deposit will remain open until January 13, 1933.

Ferdinand Eberstadt, chairman of the debenture protective committee, has been elected chairman of the board of the Gas Utilities Co., of which F. E. Kistler of Tulsa, Okla., is president and John Mitchell of New York is secretary and treasurer.

Central Illinois Natural Gas Co. Asks Pipe Line Permit

Central Illinois Natural Gas Co., now serving Alexander, Ill., with natural gas from wells near the town, has applied to the Illinois Commerce Commission to construct a pipe line to cities and towns in Sangamon, Morgan and Cass Counties. The company also asks the right to issue and sell 20,000 shares of its common stock at a par value of $5 per share and 1,000 shares of preferred stock at $25 par. Hearing is scheduled for November 23.

Franchise at Hodgenville, Ky., Extended Indefinitely

The franchise recently granted to Consolidated Utilities Co. at Hodgenville, Ky., was extended for an indefinite period at a recent meeting of the town board. Supply for the town will come from fields near Bonnieville in Hart County. The company is now laying a gas transmission line from Bonnieville to Elizabethtown. The line to Hodgenville will connect with this line. John Ashcraft is vice-president of the company, with headquarters at Elizabethtown.

Rockport, Texas, Wants to Build Municipal Gas System

The city of Rockport, Texas, plans to apply for a loan from the Reconstruction Finance Corp. for funds with which to construct municipal gas, water and sewer systems for the town. E. F. Jackson, H. E. Bahr and Harold Bahr, form the committee to confer with engineers in regard to the project.

Lorraine, Kan., Scheduled for Service

Kansas Power and Light Co., Topeka, Kan., has applied to the Kansas Public Service Commission for permission to operate as a natural gas utility in the town of Lorraine.

Compressor Station at Redlands

Southern California Gas Co., Los Angeles has taken out a permit for the erection of a compressor station at Redlands, Calif.

This ROBERTSHAW DISPLAY *is ready for you!*

DEALERS everywhere are speeding up their Gas Range Sales this simple, sure way. They keep this Robertshaw full color lithographed Display always working for them, either in the window or show room. As shown above, it is just the right size to place on a range.

With this Display in use, you automatically extend an invitation to every woman coming in or near your store to have a visual demonstration of Robertshaw oven control.

It will pay you well to use this Display, for demonstrating the Robertshaw is the best way to make a woman think seriously about a new range.

And that is the kind of sales strategy you need right now. The Display is yours for the asking. Just drop us a line today.

ROBERTSHAW THERMOSTAT COMPANY
YOUNGWOOD · PENNSYLVANIA

READY!

the 4th Edition "Blue Book"

PERSONNEL DIRECTORY of the Gas Industry

Order at Once
Edition Limited

The only directory giving the personnel of gas utility district offices as well as headquarter companies, arranged by states and divided as to distributing companies, pipe line companies, producing companies and holding companies. Each distributing company lists the kind of gas served—pressure—B.t.u. content—number of meters and approximate population—and whether or not each company merchandises.

Correct as of May 15, 1932, it is the most complete and up-to-date directory available for the 22 western states, Alabama, Mississippi and Georgia.

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Please send me.....copies of the "Blue Book" Personnel Directory of the Gas Industry at $.....per copy, for which I enclose remittance of $.....

Company name .....

Address .....

Objectives of Pension and Benefit Plan

(Continued from Page 14)

counteract agitation for legislative proposals to provide universal state pensions for the aged. These are opposed generally by employers as unnecessarily expensive and harmful in their effect on individual thrift, dependence, and self-reliance."

This objective No. 6 might also be classed as a social, rather than a humanitarian or practical objective. However, this is not to be confused with the social aspect as promulgated by the several shades of communistic, socialistic, and other iconoclastic creeds. They would probably condemn, rather than commend, a pension and benefit plan, because its objectives are tangible and practical, rather than altruistic and idealistic.

The contentions of those who seriously urge a schedule of retirement incomes based on the so-called social philosophy of pensions, are that a plan should provide first, for a generous income which not only would provide an existence with comforts, but also some of the luxuries; and second, that all monies accumulated for such purposes, both by the company as well as by the employee, should be paid to those employees who, voluntarily or involuntarily sever their relations with the company prior to retirement.

Thus, they say, there would be removed from the granting of pensions all paternalism, and by allowing the employee to carry with him from place to place these joint accumulations, he would be able to provide for his old age, regardless of the number of enterprises he may have worked for during his productive years. My opinion is that such an arrangement would greatly increase the down payments on shiny, new automobiles.

Such an arrangement might be possible for teachers, civil service employees, and institutions which have the tax payers behind them, as it seems to be possible to spend taxes more magnanimously, and in the past they have been a surer source of income than the profits of industry. However, the prospective atrophying of tax sources may force the abandonment of these grand gestures, even in public pensions.

In many cases, employees will have made some provision themselves, and to the extent that the benefits of a pension plan are additional income, they take on the nature of a reward; and by a coincidence, they recognize the social philosophy of pensions. Also, to the extent that most plans provide for the return of the employee's own contributions upon departure, they may embrace the social philosophy.

However, the inclusion of these withdrawal privileges is usually prompted by the thought that these contributions have been earned by the employee, and that they are savings from these earnings, and therefore, must be held inviolate and returned to him, either in the form of benefits, or in the form of cash upon withdrawal.

When philosophy is carried to such extremes as to suggest the donating of company pension contributions to departing employees, to be used as they see fit, it is well to review the primary causes for the existence of pensions. It will be recalled that pensions would not be needed at all in the majority of instances, if improvidence was not more prevalent than thrift.

(Characteristics of funding pension and benefit plans will be presented in the concluding installment of Mr. Hornby's discussion.—Editor.)

Municipal Gas Distribution Planned for McLean, Texas

The city council of McLean has agreed on a contract with D. W. Humphreys of Amarillo, Texas, to grant a franchise to supply McLean citizens with natural gas at a 30c maximum rate, with a school and church rate of 10c. The deal is conditioned upon securing an initial order for 300 meters by citizens who will agree to purchase gas from the new company for a period of 3 years.

The city is at present supplied with gas by the McLean Gas Co.

General Petroleum Corp. Brings in Large Buttonwillow Gasser

A new gas producer, General Petroleum Corp.'s No. 2 well on the Morris lease, Buttonwillow field, California, came in wild during the middle of October, shooting more than 300,000,000 cubic feet of natural gas into the air during the five days it remained uncapped. The new well has been brought under control and will be placed on production shortly.

Two New Holders at Needles

The Needles Gas & Electric Co., Needles, Calif., late in October put into operation two new high pressure storage holders. The gas is stored under pressure of 125 pounds, and will be used for emergency and peak-load purposes.

George E. Keller, Credit Manager for L. A. G. and E., Passes

George E. Keller, credit manager for the Los Angeles Gas and Electric Corp., Los Angeles, Calif., passed away on September 23. Mr. Keller has been with the company since June 1, 1906, becoming chief collector on November 1, 1917, and credit manager on November 1, 1929.

Montana-Dakota Power Co. Gets Bismarck Heating Contract

Montana-Dakota Power Co. has the contract for heating the city hall and library at Bismarck, N. D. with natural gas. It is reported that the buildings can be heated with gas at a saving of 20.7 per cent over the cost of the fuel previously used.

Improving Armona, Calif., System

Extension of gas mains in Armona, Calif., was under way late in October by the Southern California Gas Co., of Los Angeles, Calif. The town is in the San Joaquin Valley Division of the company, of which C. M. Eyman is manager.

San Francisco Appliance Dealers

MRS. ATHERTON HONORS SET BY WRITERS
WARD GAS FURNACES — ALADDIN GAS FURNACES
POULSEN & COMPANY
"Nice and warm in here!"
"Yes, but we never had real comfort until Gas Heating was installed"
Can you say this about your home?
POPULARITY OF GAS HEATING ON INCREASE
GUARDIANS 'GAINST CHILL OF COOL WINTER DAYS AND NIGHTS
INSTALLATIONS SHOW GAIN
EFFICIENCY IS PRIME FACTOR
TAY HOLBROOK INC.
GAS FIRED WARM AIR FURNACE
WITH BUNSEN TUBE BURNER
TAY HOLBROOK INC.
P-T. A. LUNCHEON HOST
Fifty and Fit
Opden Mills Guest At Prisoners' Lunch
SEE YOUR DEALER OR THE
P·G·and E·
PACIFIC GAS AND ELECTRIC COMPANY
Owned · Operated · Managed by Californians
An investment in health and in Real Comfort
The New SPARK Radiant Circulating Heater
Heater Headquarters
$21.95
Eureka Stove Co.
FALCO GAS FURNACE
PACIFIC HEATING CO.
WILLIAMS WARMOLATOR
WILLIAMS RADIATOR CO.
Install Your Heating Equipment Now
STANDARD HEATING & SHEET METAL SHOP
LOWELL DAVISON
PRECITA SHEET METAL WORKS
TELTZ & COMPANY
Hocking's Service
J. L. MONTGOMERY & SON
XLCR
Excelsior Sheet Metal Products Co.
Pacific GAS HEATING SPECIALISTS
H. C. HYDECKER CO.
Comfort
Electrogas
ELECTROGAS FURNACE CO.
Stop a COLD the First Day!
It's the inside of the Furnace that counts
RUUD HEATER CO.

USE TIE-IN ADVERTISING

To Increase Sales

Gas appliance dealers in San Francisco, as well as throughout Northern California, have long since learned that tie-in advertising virtually doubles the value of their advertising dollars.

THEY KNOW that each P. G. and E. gas advertisement creates and builds up public desire for gas heating appliances. Prospects are invited to visit dealers' stores. Unless these newly created prospects know WHERE to buy gas heating appliances, many possible sales will be lost.

The dealer who wants P. G. and E. advertising to produce sales for his store profits most by running his own advertising in space adjoining that used by this Company. He thus gets the benefit of P. G. and E. advertising as well as his own. He identifies his place of business with the major gas heating campaign. The tie-in advertisement centers interest upon his store.

As evidence of the increasing use of tie-in advertising, records show that dealers in this territory used 559 tie-in advertisements totalling 6,472 column inches during the period February 15 to October 1, 1932. To increase your appliance sales as others are doing, tie in your advertising, sales plans, and displays with the major campaign.

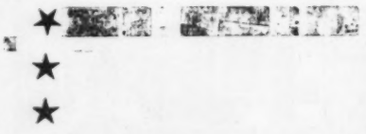
WG 211-1132

P·G·and E·

PACIFIC GAS AND ELECTRIC COMPANY

OWNED · OPERATED · MANAGED BY CALIFORNIANS

NOW
A GREAT FRATERNAL ORDER
SELECTS MADSENS



The beautiful new Eastern Star Home on Beverly Boulevard, in West Los Angeles, is to be one of the very finest institutions of its kind in America.

Need we add that in the kitchens you will find a battery of the latest type, streamline Madsen Series 34 Cuisine Ranges?

Wherever excellence, efficiency and economy are sought in heavy duty natural gas equipment, there you will find Madsen Ranges.

MADSEN
IRON WORKS, LTD.

P. O. Box 601, Huntington Park, California
(Suburb of Los Angeles)
San Francisco Factory Representative:
Fred R. Sanford, 837 Howard Street
Madsen Hotel and Restaurant Kitchen Equipment
Sold by Leading Equipment Dealers

A LENGTH of 48-inch cast iron pipe weighs over 6 tons. To produce 16 lengths it is necessary to mine 275 tons of ore, 275 tons of coal and 75 tons of limestone. This material — 625 tons — yields 100 tons of pig iron which in turn yields 100 tons of pipe. Freight is ultimately paid on 825 tons of material. To produce and lay 100 tons of cast iron pipe requires the labor of 740 men for a day. Laying pipe thus gives employment in basic industries — m i n i n g, foundries, railways, contracting—and is one of the ways back to prosperity.

U. S.
Cast Iron Pipe

United States Pipe and Foundry Co., Burlington, N. J. Sales Offices: New York, Buffalo, Cleveland, Chicago, Philadelphia, Pittsburgh, Dallas, Birmingham, Kansas City, Minneapolis, Seattle, Los Angeles, San Francisco

Payne

Something to Tie To

In times of uncertainty you can make sure of being absolutely right if you

STANDARDIZE

on the make of gas furnaces recognized in the industry as STANDARD.

New Models at Lower Prices

You Owe It to Yourself to Consult With Us.

PAYNE FURNACE & SUPPLY CO.
Since 1914
Beverly Hills, California

Robert E. Lanier, Republic Steel Corp. Executive, on Pacific Coast

ROBT. E. Lanier, district sales manager, Republic Steel Corp., was a visitor on the Pacific Coast the latter part of October. During his limited stay with Fred Gilmore and George Emanuels of the Los Angeles office of the company, Mr. Lanier had the opportunity of renewing his acquaintance with executives of the gas and oil industries.

Robert E. Lanier

Mr. Lanier for many years acted as manager for the Los Angeles office of the Republic Steel Corp. For the past two years he has been in charge of sales for Republic in Texas, Arizona, New Mexico, Oklahoma, and Colorado.

Municipal Gas Plant at Pittsburg to Cost About $425,000

A municipal gas distribution system in Pittsburg, Kan., will cost in the neighborhood of $425,000, according to figures submitted to the city commission by P. B. Smith, city engineer and R. J. Paulette of Salina, Kan., consulting engineer. The city has advertised in Tulsa, Wichita and Kansas City papers for proposals for supplying the gas, according to Henry Wilson, chairman of the gas plant investigating committee, but no bids had been received up to the middle of October.

West Texas Gas Co. Holds Two-Day Managers Meeting

A two-day meeting of managers of city plants of the West Texas Gas Co., Lubbock, Texas, was held October 27-28, with R. F. Hinchey, general manager, in charge. Problems of transporting and distributing gas were discussed by the various members of the company's executive staff.

Chowchilla Now Served

Natural Gas was turned into the distribution system of San Joaquin Light & Power Corp. at Chowchilla, Calif., on October 19. The new town will come under the Madera district of the company, of which J. E. Barrett is manager.

Eden, Texas, Scheduled for Service from Coleman Field

B. J. Pittman and F. B. Spence, De Leon, Texas, are reported to be formulating plans for serving Eden, Texas, with natural gas from wells in Coleman County. W. L. Wall is representing the company in Eden, where a franchise application is pending.

Muscatine, Iowa, on "Natural"

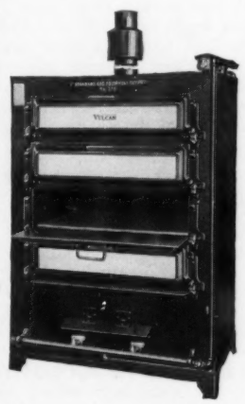
Muscatine, Iowa, served by Iowa Electric Co., with 2,655 meters, was changed over from water gas to natural gas early in October. V. H. Lear is manager for the company at Muscatine.

Drumwright Franchise Granted

The Drumwright, Okla., city council on October 6 granted a 25-year gas franchise to the Natural Petroleum Co.

How to hold *(and increase)* your heavy duty cooking load

No. 3764
Deep Fat Fryer



No. 3761
Insulated Bake Oven

No. 3758
Radiant Surface Broiler

WHAT must you do to hold and increase your heavy duty cooking load? There is but one answer . . . to replace obsolete equipment with the latest gas cooking equipment that proves the superiority of gas as a cooking fuel.

To interest prospects in these times you must show them that gas cuts cooking costs and improves service. Vulcan provides you with some "brass tack" points that should interest any prospect:

1. Heat losses and gas consumption in oven cooking are reduced by heavily insulated oven walls.
2. Overheated ovens and resultant food shrinkage and waste of gas are prevented by oven heat control.
3. Oven heat is used more effectively in baking and roasting by improved flue system.
4. Top cooking is made more efficient by All-Hot-Top. Heat of one burner spreads under entire top. All rings of burner heat top quickly; then one ring keeps it hot economically.
5. Labor costs are reduced because equipment requires less watching due to automatic control . . . smooth front is kept clean with less work. More comfortable working conditions increase efficiency of help.
6. Insulated, heat controlled deep fat fryer cuts fat costs 25% or more, and assures better fried food.
7. Insulated, heat controlled bake oven assures uniform results every time with lower fuel consumption.
8. Radiant broiler cuts fuel costs, speeds up service and gives a superior quality of broiled food.

Assign one or more men to consistently check up every heavy duty cooking installation on your mains. You will find many opportunities to replace obsolete equipment and hold and increase your cooking load.

Ask for copy of the new Vulcan catalog containing data on the most complete line of heavy duty cooking equipment ever offered.

VULCAN

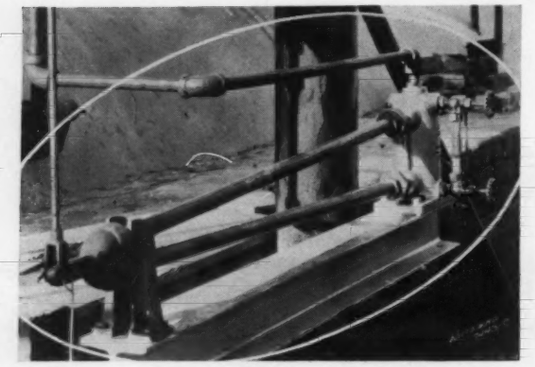
VULCAN EQUIPMENT MAKES GAS THE MODERN EFFICIENCY FUEL—CLEAN, FAST, ECONOMICAL

STANDARD GAS EQUIPMENT CORPORATION
20 East 41st Street, New York City

New York . Philadelphia . Baltimore . Chicago . Boston . Birmingham

Pacific Coast Distributor:
Northwest Gas & Electric Equipment Co., Portland, Oregon

No. 4751
All-Hot-Top Range



Keep Dry Steam in Your Boilers —with the improved

VOLZ Feed-water REGULATOR

Keeps a steady water level in your boilers, maintaining constant degree of dryness. Only ONE moving part! Simplest—and most accurate. Ask for literature.

J. A. CAMPBELL CO.

Mfrs. of Gas Specialties, including Daniel Orifice Fitting
P. O. Box 669, Long Beach, California

FRASER
GAS APPLIANCES AND FURNACES

Announcing—

Two New Large Capacity

FLOOR FURNACES

No. 135 —50,500 B. T. U. Input
No. 135A—57,000 B. T. U. Input

The Complete Line now includes
7 sizes Floor Furnaces
11 sizes Basement Furnaces
2 sizes Wall Furnaces
5 sizes Pipeless Furnaces
5 sizes Console Heaters
Baked or Porcelain Enamel

Write for our new catalog and price list.

Manufactured by
Fraser Furnace Company
Stockton, Calif.
Distributed by
H. R. BASFORD CO. San Francisco Los Angeles

"Antileke"

The hypo-sealed pipe joint saves 20% to 50% in laying cast iron or steel pipe and repairing any ordinary or difficult gas leaks.

Thousands in use without a single failure.

GAS & ELECTRIC FACILITIES, LTD.
447 Sutter St., San Francisco

Send literature and prices on "Antileke"

Name.....

Address.....

City.....State.....

C. E. Brock is Featured Speaker at State Meeting of A.P.I.

The Kansas chapter of the American Petroleum Institute held its state meeting at McPherson, Kan., on October 8, with between 50 and 60 men of the industry attending. H. M. Williams, of Mid-Kansas Oil and Gas Co. was chairman in the absence of H. L. McQuiston, president of the chapter. C. E. Brock, general manager of the Kansas Pipe Line and Gas Co. gave the principal address of the evening, speaking on gas production, methods, conservation and other problems connected with gas development. Mr. Brock also outlined the process of development of a company organized in Kansas for the transmission and distribution of natural gas. Mr. Brock stated that more than $100,000,000 is invested in natural gas pipe lines and distributing systems in Kansas, 377 cities of a combined population of 900,000 being served. Kansas Pipe Line and Gas Co. during the four years it has been in business has purchased 45,514,000,000 cubic feet of gas having a value of approximately $3,250,000.

Two Companies Formed to Supply Gas at Muskegon, Mich.

The Old Dutch Refining Co., Muskegon, Mich., of which John Bordon is president, has filed application with the Michigan Securities Commission for the incorporation of two companies to construct and operate a 75-mile natural gas transmission line from Mr. Pleasant gas fields to Muskegon and intervening points. The names of these two gas companies are Michigan Natural Pipe Line Co., to build the line, and the West Michigan Gas Co., to distribute the gas. The commission has not taken final action on the application.

Somerset, Ky., Now Served By Peoples Gas Co. of Kentucky

Peoples Gas Co. of Kentucky, Inc., subsidiary of Petroleum Exploration Co., Sistersville, W. Va., began service of natural gas in Somerset, Ky., early in October. The construction of the distribution system was under the direction of H. P. Manns. A. R. Marshall is president of the company, which maintains Kentucky headquarters at Corbin. R. S. Strossel of Louisville has been named heating engineer with the company at Somerset.

Somerset, Ky., was scheduled to have natural gas service by the first of November, Peoples Gas Co. completing the distribution system about that time.

Natural Gas Franchise Granted at Laramie, Wyo.; Line to be Reconditioned

Laramie Gas Co., for several years distributor of manufactured gas in Laramie, Wyo., has been granted a franchise for the service of natural gas there. The gas will come from the Dutton Creek field in Carbon County, the company utilizing a reconditioned oil line for its transportation.

Veeder Gets Oswego Extension

Veeder Supply and Development Co., Cherryvale, Kan., has been granted an extension of time to furnish the proposed municipal gas distribution system at Oswego with natural gas. Emmet C. Veeder is president of the company.

"ELECTROLUX *has given a strong impetus to the use of other gas-consuming appliances"*

This is the statement of

William J. Welsh

President of the

New York and Richmond Gas Co.

•

EACH YEAR—during the past five years—Electrolux has played an increasingly important part in shaping the popular trend to greater domestic use of gas.

For, not only does every Electrolux installed add 1500 cu. ft. to the monthly load. But more than that, because Electrolux is so outstandingly modern, it popularizes the use of gas as the up-to-date fuel. This gives a valuable impetus to the sale and use of other gas-consuming appliances, and provides an important keystone in the selling appeal of the automatic All-Gas Kitchen.

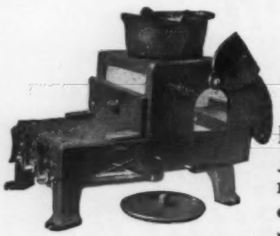
It is little wonder, therefore, that so many successful gas executives have concentrated strong selling and merchandising effort on Electrolux. They have grasped the significance of Electrolux not alone as a load builder and a source of customer good-will, but also as an important factor in the future growth of the gas industry.

Specially prepared material is available to assist you in developing profitable Electrolux business in your territory. For details, write Electrolux Refrigerator Sales, Inc., Evansville, Ind.

A tiny gas flame makes constant, steady cold

ELECTROLUX

THE *Gas* REFRIGERATOR



Johnson No. 118 Bench Furnace For Every Shop Use

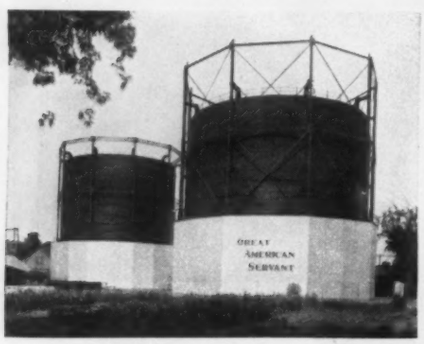
In shops all over the country you'll find the Johnson No. 118 a popular, useful tool. Melts metals, heats soldering coppers, long rods, etc., and is very useful for heat-treating small parts. Operates efficiently without a blower.

Real Value in This Melting Furnace

The Johnson No. 305 offers every feature you could ask for in a melting furnace. Heats a capacity of 300 lbs. as quickly as a blast furnace. Amazingly low gas consumption. Special outlet valve near bottom permits drawing of molten metal before entire pot is melted. Write for complete catalog of Johnson Industrial Appliances.

JOHNSON GAS APPLIANCE CO.
Cedar Rapids IOWA

Pacific Coast Representative—C. B. BABCOCK CO.
135 Bluxome St., San Francisco, Calif.



Great .... American Servant ..

Protected Throughout

These two gas holders are protected with NO-OX-ID in the cups, on the top lifts, the frame work and the water tanks. The owners wanted reliable protection and used the one material that has proven best through years of experience.

Recommendations and estimates supplied gladly.

DEARBORN CHEMICAL COMPANY
LOS ANGELES:
807 Mateo Street Phone TRinity 3385
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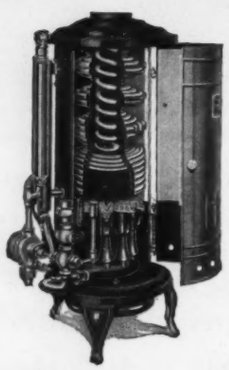
421 Bryant Street Phone Sutter 8688

NO-OX-ID IRON-RUST
The Original Rust Preventive

HOFFMAN



Low Prices alone mean little but Low Prices and High Quality mean everything. You can make money with HOFFMAN.

Details on request.

THE HOFFMAN HEATER COMPANY

1701 Dixie Highway
Louisville, Kentucky

Richmond Water Works Asks Loan or Gas System Reconditioning

The Richmond Water Works, Richmond, Ky., has applied to the Reconstruction Finance Corp. for a loan of $40,000 to rebuild the gas distribution system in Richmond. The company plans to clamp about 7 miles of mains, then make a 2-mile extension, test and replace about 200 services and replace about 200 manufactured gas meters with natural gas meters. At present the gas system averages a leakage of 35 per cent. Ben R. Dougherty is superintendent of the Richmond Water Works, a municipal organization.

Cyr Gas Co. to Operate in Rich Hill and Hume, Mo.

Cyr Gas Co., Rich Hill and Hume, Mo., has taken over all the properties of the Bourbon Pipe Line Co. and the Bourbon Natural Gas Corp., and will operate them as the Cyr Gas Co. with Louis C. Cyr as president and John L. Cyr as general manager. Headquarters will be in Rich Hill.

These properties include the following towns: Rich Hill and Hume Mo., and Prescott, Fulton, and Mapleton, Kan., where 1,000 B.t.u. natural gas is being served under low pressure.

Northwest Oil & Gas Assn. To Meet at Seattle in December

Northwest Oil & Gas Association will hold its third annual convention at Seattle, Wash., during the first week of December. The Association is made up of geologists, engineers and operators of the Northwest. E. A. Sims is president, H. S. McGowan, vice-pres., Milton Hurwitz, Seattle, secretary, and H. S. Sackett, treasurer. William T. Perkins is chairman of the board.

New Price Card Announced by Republic Steel Corp.

Republic Steel Corp., Youngstown, Ohio, has issued a new price card, effective October 1, 1932, on Toncan copper molybdenum iron pipe.

The new card, No. 4, embodies a simplified method of computing prices and reflects slight changes in prices of various sizes of Toncan iron pipe.

R. G. Logue Now President of Furnace Dealers Association

R. G. Logue, general sales manager of the Ward Heater Co., Los Angeles, was elected president of the Furnace Dealers' Association of Los Angeles at its annual meeting in October. Mr. Logue is one of the oldest gas appliance executives in the city, having entered the field in 1909. Other officers elected were Lewis H. Freymuth, Jr., vice-president, and Jesse E. Martin, secretary-treasurer.

Office Opened at Richmond

Texas Gas Utilities Co., recently opened an office at Richmond, Texas. The company has been serving in the town for sometime, business having been transacted at the bank until the opening of the new office.

Arminto Gets Natural Supply

Arminto, Wyo., is now being served with natural gas from wells near the town, a line having recently been completed by A. J. Carlson and D. C. McCellan.

$5.25

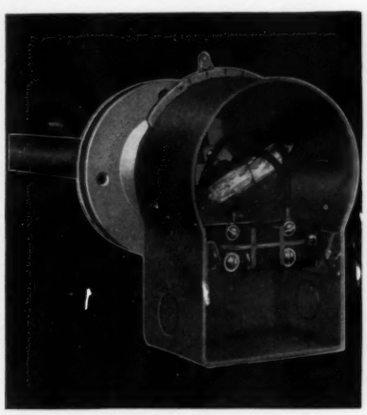
THE PRESSURETROL—For low pressure boilers. Price $5.25 net each, lots of 12

THE SURFACE AQUASTAT—For hot water. Price $5.25 net each, lots of 12

NEW LIMIT CONTROLS

Simplified and Standardized Design ... Improved Performance at the Lowest Prices Ever Offered

THE VAPORSTAT—For vapor. Price $6.25 net each, lots of 12



THE AIRSTAT—For warm air. Price $6.25 net each, lots of 12

$6.25

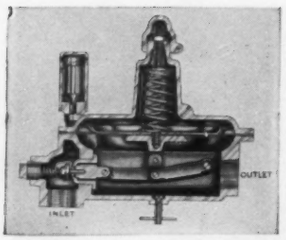
Above prices apply on standard package of 12. Add 50 cents for less than standard package. West Coast prices 25 cents higher.

MINNEAPOLIS-HONEYWELL presents a new line of limit controls with improved performance at the LOWEST PRICES EVER OFFERED. These amazing price reductions (approximately 50 per cent) are made possible by simplified and standardized design without sacrifice of the traditional Minneapolis-Honeywell quality. The rugged simplicity, extreme accuracy, close operating differential, visible scales, outside setting and leveling and locking devices, insure efficient operation, complete satisfaction and full protection for your burner. Their new low prices enable you to include limit controls on every job, large or small, old or new. Minneapolis-Honeywell Regulator Company. Executive Offices, 401 East Twenty-eighth Street, Minneapolis, Minnesota. Factories: Minneapolis and Elkhart and Wabash, Indiana.

BRANCH AND DISTRIBUTING OFFICES: Akron - Allentown - Baltimore - Bloomfield - Boston - Buffalo - Butte Chicago - Cincinnati - Cleveland - Dayton - Denver - Detroit - Duluth - Grand Rapids - Hartford - Indianapolis - Jackson Kansas City - Los Angeles - Lowell - Madison - Milwaukee - Minneapolis - Montreal - New York City - Niagara Falls Peoria - Philadelphia - Pittsburgh - Portland, Me. - Portland, Ore. - Providence - St. Louis - Salt Lake City - San Francisco Springfield - Syracuse - Toledo - Toronto - Washington - Wichita - Worcester - Youngstown. CANADA: Minneapolis-Honeywell Regulator Co., Limited, Toronto and Montreal. EXPORT: New York City. CABLE ADDRESS: "Laboramus"

MINNEAPOLIS-HONEYWELL

Control Systems



REYNOLDS

GAS CONTROL SINCE 1892

Reynolds Products—

Products for all kinds of Pressure Reduction—for either artifiicial or natural gas.

GOVERNORS—Intermediate Pressure, Triple Outlet, Holder, Toggle Type Street.

REGULATORS—High Pressure Service, Low Pressure Service, High Pressure Line, Single and Double District Station.

VALVE—Automatic, Quick-Closing Anti-Vacuum, Relief, Cut-off.

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COMBINATION GAS and OIL BURNERS

For Power Plant and Industrial Uses

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The PARK WILSHIRE HOTEL APARTMENTS

Most desirably situated on Wilshire Boulevard, adjoining beautiful Westlake Park---15 minutes from the city center. By bus directly in front of the building and by three car lines within one block.

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Apartments from $75 a Month
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2424 Wilshire Blvd., at Westlake Park

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Modern, Home-like and Supremely Comfortable

LOS ANGELES

Iowa-Nebraska Light & Power Conducts Letter-Writing Contest

Iowa-Nebraska Light & Power Co., Lincoln, Neb., recently sponsored an interesting letter-writing contest, wherein the first prize was a "paid in full" receipt for the winter's fuel bill and the second a gas range or water heater. The company serves several score of towns in Iowa and Nebraska, the contest covering the entire area. Entrants in the contest were asked to write a 200-word letter on the advantages of gas as a fuel, with October 22 set as the dead line. Winners were to be announced sometime during the first week of November.

Mike Groom Transferred to McAllen from Brownsville

Mike Groom, formerly manager for the Rio Grande Valley Gas Co. in Brownsville, Texas, has been named manager for the company at McAllen, Texas. Brownsville has been designated headquarters of the company, with C. O. Rockwell, general manager, in charge.

New Feeder Line to Increase Gas Supply at Santa Fe

Supplementing its present service to Santa Fe, N. M., the Southern Union Gas Co., is constructing a new high-pressure feeder line to increase the available supply for the city during the coming winter season. E. B. Jones is manager for the company at Santa Fe.

Northwest Texas Gas Co. Properties Purchased by Lone Star

Announcement was made late in October of the purchase by Lone Star of the Northwest Texas Gas Co. properties in Wilbarger, Hardeman, Foard, Knox, Jones and Haskell counties. The properties will be operated by Community Natural Gas Co., Dallas, Texas, subsidiary of Lone Star Gas Co.

W. A. Taylor Named Byers Division Manager at Chicago

H. W. Rinearson, vice-president of sales, A. M. Byers Co., Pittsburgh, Pa., announces the appointment of W. A. Taylor as division manager in charge of the Chicago office of the company. Mr. Taylor, formerly assistant manager, replaces M. G. Henderson, resigned.

Childress Now District Headquarters for Northern Texas Utilities

Offices of Northern Texas Utilities Co., Childress, Texas, have been moved into larger quarters, the town having been designated as district headquarters for six counties. G. L. Taylor is district manager and M. J. Bretherton is local manager.

Dickson County Oil & Gas Co. Gets Nashville Franchise

The Dickson County Oil & Gas Co., Nashville, Tenn., has been awarded a franchise to serve Nashville with natural gas from the Dickson County field. A transmission line approximately 30 miles long will need to be constructed from the field to Nashville.

New Warehouse at Mineral Wells

Brazos River Gas Co. is completing a new warehouse building adjoining its office building at Mineral Wells, Texas.

Champion New General Sales Manager for Byron Jackson

APPOINTMENT of Frank Champion as general sales manager for Byron Jackson Co. has been announced.

Mr. Champion is a graduate engineer with several years practical experience in both drilling and production work. Following this field service, he became sales manager for Pacific Wire Rope Co., and later served in a similar capacity for the Lorraine Corp.

From 1929 until early in 1932, as a member of Champion & Barber (which firm successfully introduced and marketed several new specialties) he established a wide acquaintance among both oil operators and officials. Upon dissolution of the last named concern, he became identified with the Byron Jackson organization, and his appointment on October 15 as general sales manager now brings under his direction all export, Mid-Continent and California sales activities for the Oil Tool Division of the company.

Frank Champion

By-Pass Lateral for Emergency Use Between Interstate Lines

Northern Gas and Pipe Line Co., Omaha, Neb., and Natural Gas Pipe Line Co. of America, Chicago, Ill., are completing a 12-inch, 2-mile, by-pass lateral between the main lines of the two companies in Mills County, Iowa. The by-pass line will serve in emergencies should a breakdown occur in either of the two main lines.

Sparta Gas & Oil Co., Sparta, Tenn., Under New Management

Austin Gatlin of McMinnville, Tenn., and R. C. Grady of Wilmington, Del., have taken over the operation of the Sparta Gas & Oil Co., serving natural gas in Sparta, Tenn., and owning wells in the Sparta field.

Goldfield Asks for Natural

Goldfield, Iowa, may have natural gas, if negotiations being carried on between that town and the Iowa Public Service Co. are successful. The town is at present without gas service. Supply would come from the Northern Gas and Pipe Line Co.'s carrier.

A Lever Safety Valve for Positive Protection

THE Fulton Lever Safety Valve can be set to blow at any desired pressure between 10 and 100 pounds. Its action is positive and sure. It will not stick, nor in any way fail to relieve the line of excess pressure in case of need.

FOR low-pressure distribution, between the high-pressure and the low-pressure regulators, it is advisable to have a lever-type valve. In fact such a valve is recommended for any service involving pressures of 5 to 100 pounds, while for lower pressures, dead-weight valves are available.

FULTON Valves are of special design and superior workmanship and have been proved by many years of unfailing service. Correspondence is invited regarding C-F Gas Regulators, Valves and other requirements for gas control. Descriptive leaflets will be mailed on request.

The Chaplin-Fulton Mfg. Company

28-40 Penn Avenue **Pittsburgh, Pa.**

Organized 1884—Oldest Builders of Gas Regulators in the Country.
Built of all Sizes, from 1 Inch to 24 Inches; for all Service.
1 oz. up to 2,000 lbs. Pressure to Square Inch.

Representatives:

Westcott & Greis, Inc.
Sales Service:
Dallas — Tulsa

CF

Jno. W. Crawford
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Sales Engineer:

Or Any Jobber

The Goodman Stopper

The Reliable Shut-off for Street Mains

Equipped with Improved Patented Locking Sleeve, which locks both handles to the pipe. Stopper cannot slip. Gas cannot pass.

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Pac. Coast Rep.: C. B. Babcock Co.
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Excels for Gas Service

The unusual care given to accuracy of diameter and welding qualities, makes Chester Pipe a favorite for gas lines.

SOUTH CHESTER TUBE CO.
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Use Fisher Gas Pressure Regulators for All Gas Service

Butane, Propane, Natural and Artificial Gas and for All Pressure Conditions

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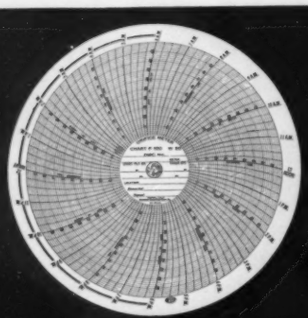

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Classified advertising five cents per word; minimum $2.00 per insertion. Situation Wanted advertisements up to 50 words will be published three consecutive issues without charge. Small professional cards 1-in. deep by 21 ems wide are $6.00 monthly on 12-time contract.

SITUATIONS WANTED—MALE

Manager-engineer, broad experience covering operation and maintenance, also supervision of construction of distribution systems. Have been succeeded by a man who is my senior in service. Good references. Married, healthy, age 35. Will go anywhere for a permanent situation. Address Box E-219, *Western Gas,* 124 West Fourth Street, Los Angeles, Calif.

Married man, age 25, desires position in engineering department, location immaterial. Applicant is experienced in sales, domestic and industrial work, and is familiar with butane plant construction and operation. Education, full experience and references furnished. Desire start at bottom, at your salary. Address Box E-221, *Western Gas,* 124 West Fourth Street, Los Angeles, Calif.

Experienced town plant manager desires position. Can handle commercial jobs or act as sales manager. Understands fully distribution and sale of high and low pressure natural gas. To prove ability will work as territory salesman. Moderate salary. Has good merchandising record. Best references. Address Box E-223, *Western Gas,* 124 West Fourth Street, Los Angeles, Calif.

Executive with experience in butane-propane plant construction and operation seeking new connection. Would consider interest in company. Now general manager and treasurer group utilities. Always held responsible positions. Married. Age 45. Can handle men. Will locate anywhere. Address Box E-225, *Western Gas,* 124 West Fourth Street, Los Angeles, Calif.

Wanted, position by young married man, 26 years of age, American, as gas fitter and service man. Applicant is experienced in all types and makes of gas appliances, also conversion and industrial jobs. Address Box E-227, Western Gas, 124 West Fourth Street, Los Angeles, Calif.

United Utilities Wants to Build Carrier to Boise and Weiser

The United Utilities Corp. has made application to the Public Utilities Commission of Idaho for a permit to construct a natural gas transmission line from Weiser, Ida., through Boise. The line would extend across the Snake River from Ontario, Ore., and would serve natural in Boise and Weiser.

— *ANNOUNCEMENT* —

WELSBACH

HOTZONE SPECIAL

Self Action Storage Gas Water Heater

Correctly designed to furnish real

HOT WATER SERVICE

For a Fixed Monthly Charge

Heaters are equipped with
WELSBACH REFLEX AUTOMATIC BURNER
AND
SAFETY GAS SHUT-OFF

made in
45 and 60
gallon sizes

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PRODUCT

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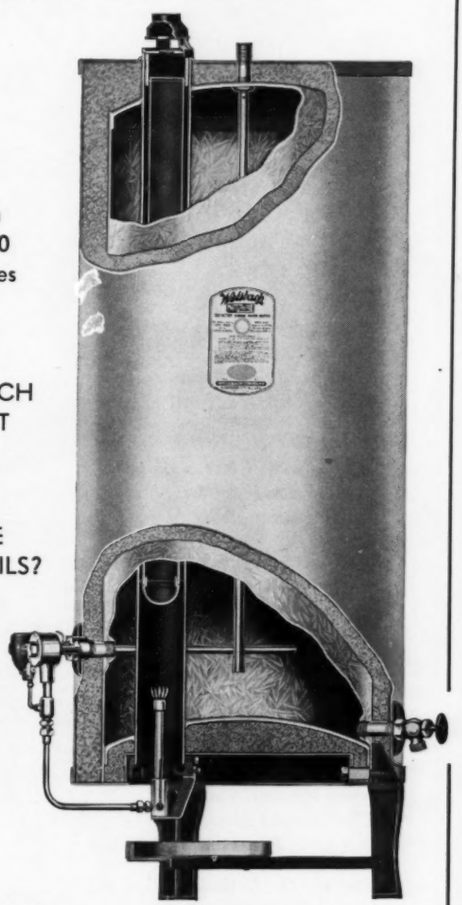
SEND DETAILS?



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Be ready to take advantage of fair trade winds so that your "sales" of industry may carry you out of these economic doldrums into seas of prosperity.

Don't have the visibility of a pessimist!!

Renewed business activities are showing on the horizon. The earth is still round. We will not fall off the edge!

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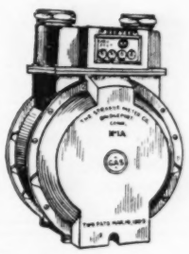

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Electric Hum Eliminated, 1/2-3" sizes. Low and High Voltage. Built for High Pressure Gas. Made in slow-opening types. Simple in Design—Infallible in Operation—Low in Price.
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GAS PIPE LINE MAP

Compiled by the Editors of WESTERN GAS
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The most comprehensive published; covers the 22 western states in detail. Gives gas fields, names of natural gas communities; sizes of pipe lines and names of pipe line companies.

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Advertisers' Index

American Cast Iron Pipe Company —
American Meter Company 10
American Recording Chart Co. 54

H. R. Basford Co. 48
The Bristol Company —
A. M. Byers Company —
Byron Jackson Co. Back Cover

J. A. Campbell Co. 48
The Cast Iron Pipe Research Ass'n. 7
The Chaplin-Fulton Mfg. Company 53

Dayton Pipe Coupling Co. 8
Dearborn Chemical Co. 50
Detroit-Michigan Stove Company 39-40
S. R. Dresser Manufacturing Co. 3

Electrolux Refrigerator Sales, Inc. 49

Fisher Governor Co. 54
The Fluor Corporation, Ltd. 1
Forney Combustion Engineering Co. 52
Fraser Furnace Company 43

Gas & Electric Facilities, Ltd. 48
Groble Gas Regulator Company 37

H. W. Hart Mfg. Co. 36
The Hoffman Heater Company 50

Johnson Gas Appliance Co. 50

Kerotest Company 36

Linde Air Products Company —

Madsen Iron Works, Ltd. 46
Manhattan Rubber Mfg. 42
Milwaukee Gas Specialty Co. —
Minneapolis-Honeywell Regulator Co. 51

Pacific Gas & Electric Co. 45
The Park Wilshire 52
Payne Furnace & Supply Co. 46
Pittsburgh Equitable Meter Co. —

Reliance Regulator Corp. 5
Republic Steel Corp. 4
Reynolds Gas Regulator Company 52
Roberts-Gordon Appliance Corp. Third Cover
Robertshaw Thermostat Company 43
Geo. D. Roper Corporation —

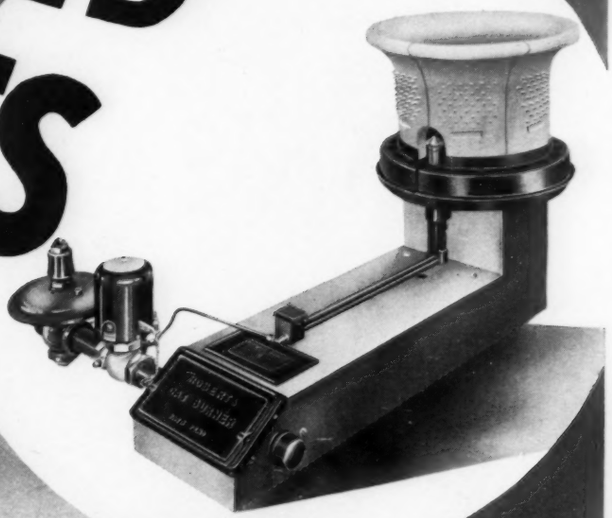
Safety Gas Main Stopper Company 53
Wm. B. Scaife & Sons Co. 37
Semet-Solvay Engineering Corp. 42
South Chester Tube Co. 54
The Sprague Meter Co. 55
Standard Gas Equipment Corp. 47

The U. G. I. Construction Co. 2
United States Pipe & Foundry Co. 46

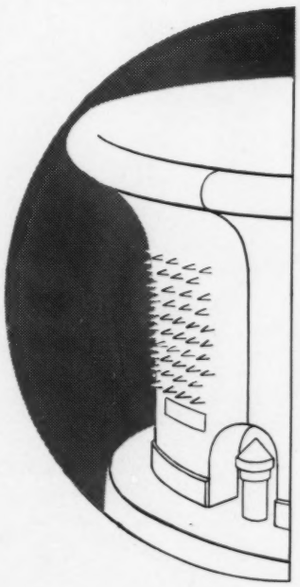
Wailes-Dove Hermiston Corporation 2nd Cover
Welsbach Co. 55
Western Gas 6

FALL'S SPOTLIGHT POINTS TO ~

THE IMPROVED ROBERTS



with self-supporting RADIANTS



Above picture is close-up view of new Roberts radiants.

The improved Roberts Standard Burner is ready! Roberts-Gordon engineers have made good their promise to have it available for Fall shipments. This burner retains all the ten famous Roberts features, plus—the new type Roberts Radiants.

The new Roberts radiants are self-supporting and no part of them comes in contact with the walls of the fire pot. There is no shifting of radiants. The new radiants always remain in a fixed position.

Roberts Standard Burners will now fit a greater range in sizes of boilers and furnaces, and the varying angles of fire pots do not have to be considered. Important too, is the ease with which these radiants may be installed - - -, adjustment of burners is now made without removal of radiants.

Place your stock orders now. Be ready for the Fall heating season with the finest burner Roberts has ever built.

ROBERTS-GORDON

APPLIANCE CORPORATION

BUFFALO, N. Y.

Factories at 21st and X Sts., Lincoln, Nebraska, and Buffalo, N. Y.

ROBERTS

CONTROLLED GAS HEATING UNIT

You KNOW that the plate is centered and sealed

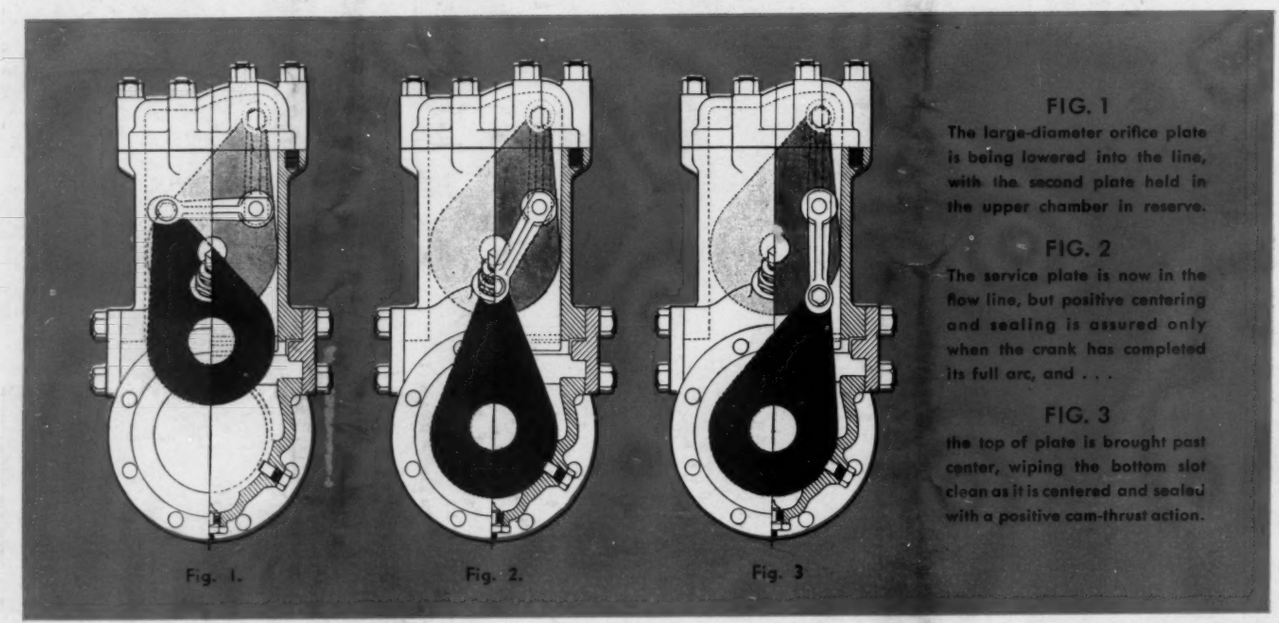


Fig. 1. Fig. 2. Fig. 3

FIG. 1
The large-diameter orifice plate is being lowered into the line, with the second plate held in the upper chamber in reserve.

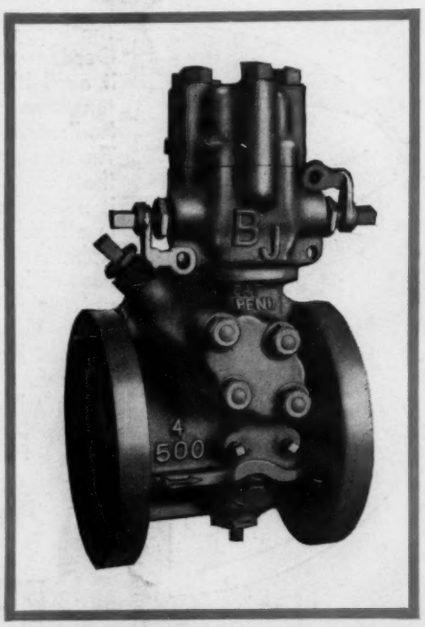
FIG. 2
The service plate is now in the flow line, but positive centering and sealing is assured only when the crank has completed its full arc, and . . .

FIG. 3
the top of plate is brought past center, wiping the bottom slot clean as it is centered and sealed with a positive cam-thrust action.

. . . due to the Positive, Cam-Thrust Action

ONLY the BJ Duplex Fitting provides definite, mechanical proof that the orifice plate is seated exactly concentric with the flow line, and sealed so that all gas must pass through the orifice, — the two vital elements of accurate measurement.

Ask for new illustrated folder describing many other modern features



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